Dart Hawkesbury
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada
Tel (613) 632-5200

Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit
PO039776	ACI001-VC	1	1	Net 30	M5052H32S.040	5052-H32 .040 Sheet : MATERIAL: 5052-H32 ALUMINUM SHEET AS PER QQ-A-250/8 OR AMS-QQ-A-250/8 OR AMS 4016 OR ASTM B209 receive sf				64	5/11/2018	64		S070814	Stock	5/12/2018	$ 2.34 / sf
		2			M5052H32S.032	5052-H32 .032 Sheet : MATERIAL: 5052-H32 ALUMINUM SHEET AS PER QQ-A-250/8 OR AMS-QQ-A-250/8 OR AMS 4016 OR ASTM B209 receive sf						64		S070815	Stock	5/12/2018	$ 1.97 / sf
		3			M6061T6R3.750	6061-T6 Round Bar 3.750"" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft				12		12		S070816	Stock	5/12/2018	$ 52.73 / ft
		4			M6061T6R0.750	6061-T6 Round Bar .750"" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft				40		40		S070817	Stock	5/12/2018	$ 1.55 / ft
		5			M6061T6B0.750X08.000	6061-T6 Bar .750"" X 8.00"" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				12		12		S070818	Stock	5/12/2018	$ 20.95 / ft
		6			M6061T6B0.750X01.500	6061-T6 Bar .750 X 1.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				20		20		S070819	Stock	5/12/2018	$ 4.00 / ft
		7			M304R0.4375	304 Round Bar 0.4375 : MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276 NOTE: AISI 303 NOT ACCEPTABLE receive ft				12		13		S070820	Stock	5/12/2018	$ 1.72 / ft
		8			M304R0.375	304 Round Bar 0.375 : MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276 NOTE: AISI 303 NOT ACCEPTABLE receive ft						12		S070821	Stock	5/12/2018	$ 13.02 / ft

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit
		9			M4140H-R1.000	4140 round bar 1.00 : AISI 4140H ROUND BAR PER AISI4140OR ASTM A304-02/-A-434-BC/-A193-03-GRADE B7/-A29-03/-A322-91 OR UNS#-G41400 MINIMUM ULTIMATE TENSILE STRENGTH=100 KSI MINIMUM YIELD TENSILE STRENGTH=66KSI						12		S070822	Stock	5/12/2018	$ 4.43 / ft
		10			M4140H-R1.500	4140 Round Bar 1.500 : AISI 4140H ROUND BAR PER AISI4140OR ASTM A304-02/-A-434-BC/-A193-03-GRADE B7/-A29-03/-A322-91 OR UNS#-G41400 MINIMUM ULTIMATE TENSILE STRENGTH=100 KSI MINIMUM YIELD TENSILE STRENGTH=66KSI receive ft				5		5		S070823	Stock	5/12/2018	$ 9.61 / ft
		11			M303R0.375 Heat # will test	303 Round Bar 0.375"" : MATERIAL: AISI 303 SS ROUND BAR AS PER ASTM A582 NOTE:304/316 NOT ACCEPTABLE receive ft				36		39		S070824	Stock	5/12/2018	$ 1.43 / ft
		12			M303R0.750 Heat #	303 Round Bar 0.750 : MATERIAL: AISI 303 SS ROUND BAR AS PER ASTM A582 NOTE:304/316 NOT ACCEPTABLE receive ft						36		S070825	Stock	5/12/2018	$ 4.85 / ft
		13			MT-A513-T-1.000W0.120	A513 Seamless Alloy Steel Round Tubing 1""dia. x 0.120"" Wall				100		112		S070826	Stock	5/12/2018	$ 2.47 / ft
		14			MT-4140-S-0.500X10.000	AISI 4140 Steel Sheet/Plate				4		4		S070827	Stock	5/12/2018	$ 58.81 / ft
		15			M6061T6S.625	6061-T6 .625 Sheet : MATERIAL: 6061-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/11 OR AMS-QQ-A-250/11 OR AMS 4025 OR AMS 4027 OR ASTM B209 receive sf				32		32		S070828	Stock	5/12/2018	$ 35.61 / sf
		16			M6061T6S4.500X12.000	6061T6 sheet 4.500 X 12.000 (Cut to 20.000"") : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				17		17		S070829	Stock	5/12/2018	$ 339.00 / ft
		17			M6061T6R10.000	6061-T6 Round Bar 10.00"" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft				3		3		S070830	Stock	5/12/2018	$ 434.45 / ft
		18			MT-A513-T-0.750W0.058	A513 Seamless Alloy Steel Round Tubing 0.75""dia. x 0.058"" Wall				20		24		S070831	Stock	5/12/2018	$ 15.25 / ft
									Total:	501		521					

DELIVERY - CLIENT

CO00087281

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	39776
Processed by	Josianne Bourdon
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	1

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
1 ALU PLATE 5/8 6061-T651 RANDOM PAL-586061-V **4298** *2 X 4' X 4' LINE 15* *HEAT:17cn-e-1597* COUPE A LA SCIE SCIE **1**	288.64	32.00 1.00	PI2_$CLB UN		2x4'x4'		32 pi2		MAY 11 2018		DAS 11 9-89
TRANSIT ST-JEROME LE 09/05											
3 ALU PLATE 4 1/2 6061-T651 RANDOM PAL-4126061-V **7485** *10 X 12" X 20" LINE 16* *AC15913-TH-09/05* *HEAT: 12-5826*	1 095.14	17.00	PI2_$CLB		10x12"x20"		10 171 pcs		MAY 11 2018		DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087281

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	39776
Processed by	Josianne Bourdon
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	2

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
4 ROUND ALU 10 6061-T6 RANDOM NS RAL-10-V **9129** *1 X 36" LINE 17* *AC15913-TH-09/05* *HEAT: 4042702*	282.75	3.00	PI_$CLB		1X 36"		3'				DAS 11 9-89 MAY 11 2018
5 TUBE MEC ~~0.750~~ OD X .058 NS TME-0750058 **9987** *1 X 20' R/L LINE 18* *AC15914-ATT-09/05* *HEAT: A718541*	44.40	20.00	PI_$PI		1X24'		24'				MAY 11 2018 DAS 11 9-89

Total Weight (Lbs) : 1 710.93

NIR : R-109516-6

Conditions :
All sold and delivered materials remain the property of "Acier Ouellette Inc" until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acier Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

Prepared By :	Verified By :	Delivered By :	Time	Y	M	D
MH						

Customer's Signature

Date

Total ($CAD)

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	1

Billed to

DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

	Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
1	ALU SHEET .040 (18G) 5052-H32 (4 X 8) FEAL-040485052 **3124** *2 X 4' X 8' (PVC 1 SIDE)* *LINE#1* *HEAT: GFB1801W50083* *AC15949-YR-2018-05-07*	36.03	64.00	PI2_$CLB		2X		(2) 64 PO2				MAY 11 2018 DAS 9-89
2	ALU SHEET .032 (20G) 5052-H32 NS FEAL-032 **9714** *2 X 4' X 8' (PVC 1 SIDE)* *LINE#2* *HEAT: GFB1710W50138* *AC15948-YR-2018-05-07*	28.86	64.00	PI2_$CLB		2X		(1) 64 PO12				MAY 11 2018 DAS

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	2

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

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Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
3 ROUND ALU 3 3/4 6061-T6 NS RAL-334 **10134** *1 X 12'* *HEAT: 201805092* *LINE#3*	155.88	12.00	PI_$CLB		1X 12'		12'			MAY 11 2018	DAS 11 9-89
4 ROUND ALU 3/4 6061-T6 * RAL-34 **5157** *2 X 20'* *LINE#4* *HEAT: 68706*	20.92	40.00	PI_$CLB		2 X 20'		40'			MAY 11 2018	DAS 11 9-89
5 FLAT ALU 3/4 X 8 6061-T6 * FAL-348 **2603** *1 X 12'*	84.96	12.00	PI_$CLB		1 X12		12'			MAY 11 2018	DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

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Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	3

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
LINE#5 *HEAT : 892190*											
6 FLAT ALU 3/4 X 1 1/2 6061-T6 * FAL-34112 **2584** *1 X 20'* *LINE#6* *HEAT: 68549*	27.00	20.00	PI_$CLB		1 X 20'		20'		MAY 11 2018		DAS 11 9-89
7 ROUND SS 7/16 304 (R) RSS-716 **5779** *1 X 12' R/L* *LINE#7* *HEAT: CH-6643*	6.13	12.00	PI_$CLB		1 X 13'3"		13.3'		MAY 11 2018		DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	4

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to
, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M **Delivery Route** 5

	Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
8	ROUND SS 3/8 304 (R) RSS-38 **5768** *1 X 12'* *LINE#8* *HEAT: 646M*	4.51	12.00	PI_$CLB		1 X 12'		12'		MAY 11 2018		DAS 11 9-89
9	ROUND 4140 HEAT TREAT 1 (R) R4140-1H **4919** *1 X 12'* *LINE#9* *HEAT: 177569*	32.04	12.00	PI_$CLB		1 X 12'		12'		MAY 11 2018		DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	5

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
10 ROUND 4140 HEAT TREAT 1 1/2 (R) R4140-112H **4893** *1 X 5'-4" OFF CUT* *LINE#10* *HEAT: 5538982* Lot# Heat 4173444	32.56	5.42	PI_$CLB		1x 5'4"		5.4'	MAY 11 2018			DAS 11 9-89
11 ROUND SS 3/8 303 (R) RSS-38303 **5765** *3 X 12' R/L* *LINE#11* *AC16150-SS-2018-05-10* mill test? & Heat #?	13.54	36.00	PI_$CLB		3x 13'		39'	MAY 11 2018			DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	6

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to
, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
12 ROUND SS 3/4 303 (R) RSS-34303 **5761** *3 X 12' R/L* *LINE#12* *HEAT: 572C*	54.07	36.00	PI_$CLB		24 12' 1x 12'6"		36'		MAY 11 2019		DAS 11 9-89
13 TUBE MEC 1.000 OD X .120 (R) TME-1000120 **6505** *5 X 20' R/L* *LINE#13* *HEAT: B721446*	112.80	100.00	PI_$CPI		1x 23' 5' 3x22' 121'4"		111.5'		MAY 11 2019		DAS 11 9-89

NIR : R-109516-6

Next Page...

DELIVERY - CLIENT

CO00087288

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°	CLI0001056
Date	2018/05/02
Delivery date	**2018/05/11**
Your order N°	PO039776
Processed by	Eric Kaehlert
Salesman	
Carrier	OUELLETTE VALLEYFIELD
Credit Terme	Net 30 Days
Page	7

Billed to
DART AEROSPACE LTD

1270 , ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to
, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Product Description	Weight	Qty	U/M	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
14 PLATE 4140 HEAT TREAT 1/2 NS P4140-12H **8509** *1 X 10" X 48"* *LINE#14* *AC15947-FU-2018-05-10* *HEAT: 300188* **NOTE :** ** CERTIFICATES WITH SHIPMENT FOR ALL ITEMS. **	68.00	3.33	PI2_$CLB		1 X 10" X 49"		41'				MAY 11 2018 DAS 11 9-89

Total Weight (Lbs) : 677.30

NIR : R-109516-6

Conditions :
All sold and delivered materials remain the property of "Acier Ouellette Inc" until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acier Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

Prepared By :	Verified By :	Delivered By :	Time	Y	M	D

Customer's Signature

Date

Total ($CAD)

Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER
PO039776

Supplier: ACI001-VC
Acier Ouellette Inc.
935 Boul. Du Havre
Valleyfield
QC
J6S 5L1 Canada
Phone: 800 667 4248
Fax: 450 377 5696

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO039776
PO Date: 5/2/18
Due Date: 5/7/18
Purchase Order Revision: REVISED
Revision Date:
Ship-To Contact: Lavoie, ChantalPhone: clavoie@dartaero.com
Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments: quote no. sou0102645 and sou0103206

E-MAILED MAY 0 3 2018

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	M5052H32S.040		5052-H32 .040 Sheet : MATERIAL: 5052-H32 ALUMINUM SHEET AS PER QQ-A-250/8 OR AMS-QQ-A-250/8 OR AMS 4016 OR ASTM B209 receive sf	Firmed	5/7/18	64 sf	0 sf 64	64 sf	$2.341875/sf	$149.88 DAS 11 9-89 MAY 1 1 2018
2	M5052H32S.032		5052-H32 .032 Sheet : MATERIAL: 5052-H32 ALUMINUM SHEET AS PER QQ-A-250/8 OR AMS-QQ-A-250/8 OR AMS 4016 OR ASTM B209 receive sf	Firmed	5/7/18	64 sf	0 sf 64	64 sf	$1.9660937/sf	$125.83 DAS 11 9-89 MAY 1 1 2018
3	M6061T6R3.750		6061-T6 Round Bar 3.750" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft	Firmed	5/7/18	12 ft	0 ft 12	12 ft	$52.73333/ft	$632.80 MAY 1 1 2018 DAS 11 9-89

Line Item Note please cut in 2 pcs of 6 ft

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
4	M6061T6R0.750		6061-T6 Round Bar .750" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft	Firmed	5/7/18	40 ft	0 ft 40'	40 ft	$1.55/ft MAY 1 1 2018	$62.00 DAS 11 9-89
5	M6061T6B0.750X08.000		6061-T6 Bar .750" X 8.00" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	5/7/18	12 ft	0 ft 12'	12 ft	$20.95/ft MAY 1 1 2018	$251.40 DAS 11 9-89
Line Item Note	2 pcs of 6 ft length									
6	M6061T6B0.750X01.500		6061-T6 Bar .750 X 1.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	5/7/18	20 ft	0 ft 20'	20 ft	$4.00/ft MAY 1 1 2018	$80.00 DAS 11 9-89
7	M304R0.4375		304 Round Bar 0.4375 : MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276 NOTE: AISI 303 NOT ACCEPTABLE receive ft	Firmed	5/7/18	12 ft	0 ft 13.3	12 ft	$1.72/ft MAY 1 1 2018	$20.64 DAS 11 9-89
8	M304R0.375		304 Round Bar 0.375 : MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276 NOTE: AISI 303 NOT ACCEPTABLE receive ft	Firmed	5/7/18	12 ft	0 ft 12'	12 ft	$13.02/ft MAY 1 1 2018	$156.24 DAS 11 9-89
9	M4140H-R1.000		4140 round bar 1.00 : AISI 4140H ROUND BAR PER AISI4140OR ASTM A304-02/-A-434-BC/-A193-03-GRADE B7/-A29-03/-A322-91 OR UNS#-G41400 MINIMUM ULTIMATE TENSILE STRENGTH=100 KSI MINIMUM YIELD TENSILE STRENGTH=66KSI	Firmed	5/7/18	12 ft	0 ft 12'	12 ft	$4.43/ft MAY 1 1 2018	$53.16 DAS 11 9-89

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
10	M4140H-R1.500		4140 Round Bar 1.500 : AISI 4140H ROUND BAR PER AISI4140OR ASTM A304-02/-A-434-BC/-A193-03-GRADE B7/-A29-03/-A322-91 OR UNS#-G41400 MINIMUM ULTIMATE TENSILE STRENGTH=100 KSI MINIMUM YIELD TENSILE STRENGTH=66KSI receive ft	Firmed	5/7/18	6 ft	0 ft 5' 4'	6 ft	$9.61/ft MAY 11 2019 DAS 11 9-89	$57.66
11	M303R0.375		303 Round Bar 0.375" : MATERIAL: AISI 303 SS ROUND BAR AS PER ASTM A582 NOTE:304/316 NOT ACCEPTABLE receive ft	Firmed	5/7/18	36 ft	0 ft 39	36 ft	$1.43/ft MAY 11 2019 DAS 11 9-89	$51.48
12	M303R0.750		303 Round Bar 0.750 : MATERIAL: AISI 303 SS ROUND BAR AS PER ASTM A582 NOTE:304/316 NOT ACCEPTABLE receive ft	Firmed	5/7/18	36 ft	0 ft 36'	36 ft	$4.85/ft MAY 11 2019 DAS 11 9-89	$174.60
13	MT-A513-T-1.000W0.120		A513 Seamless Alloy Steel Round Tubing 1"dia. x 0.120" Wall	Firmed	5/7/18	100 ft	0 ft 111.5	100 ft	$2.47/ft MAY 11 2019 DAS 11 9-89	$247.00
14	MT-4140-S-0.500X10.000		AISI 4140 Steel Sheet/Plate	Firmed	5/7/18	4 ft	0 ft 4'	4 ft	$58.81/ft MAY 11 2019 DAS 11 9-89	$235.24
15	M6061T6S.625		6061-T6 .625 Sheet : MATERIAL: 6061-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/11 OR AMS-QQ-A-250/11 OR AMS 4025 OR AMS 4027 OR ASTM B209 receive sf	Firmed	5/10/18	32 sf	0 sf 32	32 sf	$35.60531/sf MAY 11 2019 DAS 11 9-89	$1,139.37
Line Item Note	2 pcs of 4 ft x 4ft									
16	M6061T6S4.500X12.000		6061T6 sheet 4.500 X 12.000 (Cut to 20.000") : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	5/7/18	16.667 ft	0 ft 17	17 ft	$339.00135/ft MAY 11 2019 DAS 11 9-89	$5,650.14
Line Item Note	10 pcs of 4.5" x 12" cut at 20" long									

PURCHASE ORDER

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
17	M6061T6R10.000		6061-T6 Round Bar 10.00" : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ-AA-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft	Firmed	5/7/18	3 ft	0 ft 3'	3 ft	$434.4466/ft MAY 11 2018	$1,303.34 DAS 11 9-89
18	MT-A513-T-0.750W0.058		A513 Seamless Alloy Steel Round Tubing 0.75"dia. x 0.058" Wall	Firmed	5/10/18	20 ft	0 ft 24	20 ft	$15.25/ft MAY 11 2018	$305.00 11 9-89
Line Item Note	ASTM A513 TYPE 5 (1020/1026) SEAMLESS ALLOY STEEL ROUND TUBING (DOM)									
									Grand Total:	**$10,695.78**

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)
A026 certification of material conformance
A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 5/3/18 11:26 AM dart.lavoie.chantal

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M1-A513-1-0.750WO.058 PO / BATCH NO.: 039776/507083

DATE: MAY 12 2018

MATERIAL CERT REC'D: YES

QUANTITY RECEIVED: 241

QUANTITY INSPECTED: 24

QUANTITY REJECTED: Ø

THICKNESS ORDERED: WO.058

THICKNESS RECEIVED: WO.058

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A513 Type 5
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # A718541
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11 9-89	SIGNED OFF BY:
DATE: MAY 12 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

REV.	DESCRIPTION	ECN #	DATE	BY	APPROVED
A	NEW RELEASE	17-655	17.09.06	VM	WM
B	TYPE 5 ADDED, TEMPLATE UPDATED	17-790	17.12.13	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: ASTM A513 TYPE 5 (1020/1026) SEAMLESS ALLOY STEEL ROUND TUBING (DOM)

SPECIFICATION: ASTM A513 TYPE 5

PART NUMBER: MT-A513-T-[D.DDD]W[T.TTT]

WHERE D.DDD IS OUTSIDE DIAMETER IN INCHES

WHERE T.TTT IS WALL THICKNESS IN INCHES

EG. 3/4" ROUND TUBING WITH .120" WALL THICKNESS = MT-A513-T-0.750W0.120

DART AEROSPACE Hawkesbury, Ontario, Canada

TITLE: ASTM A513 TYPE 5 (1020/1026) ALLOY STEEL ROUND TUBING (DOM)

PART NO.: MT-A513-T — REV: B

TOOL NO.: -

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES INTERPRET PER ASME Y14.5M-2009 DIMENSIONS APPLY AFTER FINISHING

	INITIALS AND DATE
DESIGNED BY:	VM 17/12/13
DRAWN BY:	VM 12/13/2017
CHECKED BY:	ML 12/20/2017
MFG REVIEW BY:	DP 12/20/2017
APPROVED BY:	ML 12/20/2017

TOLERANCES: .XXX ± .005, .XX ± .01, .X ± .1, FRACTIONS ± 1/8, ANGLES ± .5°, SURFACE ROUGHNESS

SCALE: NTS — SHEET 1 OF 1

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87281

15914N

CERTIFICATE OF TEST

Certification Date
9-MAY-2018

CUSTOMER ORDER NUMBER

AC15914

Invoice Number
T131161

CUSTOMER PART NUMBER

101647

SOLD TO: ACIER OUELLETTE INC.
DIVISION SALABERRY-DE-VALLEYFIELD
935, BOUL DU HAVRE
SALABERRY-DE- VALLEYFIELD QC J6S 5L1

SHIP TO: ACIER OUELLETTE INC.
DIVISION SALABERRY-DE-VALLEYFIELI
935, BOUL DU HAVRE
SALABERRY-DE- VALLEYFIE QC J6S

Description: 1020 DOM SRA A513/5
~~.750 OD X .634 ID (.058 W) X 20/24' R/L~~ ~~Line Total: 22.19 FT~~
HEAT: A718541 ITEM: 101647

Specifications:
ASTM A513 TP 5 M ASTM A309 11

CHEMICAL ANALYSIS

C	MN	P	S	SI	CU	NI	V
0.20	0.45	0.01	0.005	0.02	0.09	0.03	0.004

TI	AL
0.001	0.024

RCPT: R431089

COUNTRY OF ORIGIN : USA

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR PSI	ULT TEN PSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
	89500.0	98300.0	16.0		95

FLATTEN:Y FLARE:Y CRUSH:Y

MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL

COMMENTS
reduction ratio 10-1
drawn in the usa

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

TERRY GALBRAITH

Material did not come in contact with mercury while in our possession.

MANAGER, CORPORATE PURCHASING

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6R10.000 PO / BATCH NO.: 039776/S070830

DATE: MAY 12 2018

MATERIAL CERT REC'D: yes THICKNESS ORDERED: 10.000

QUANTITY RECEIVED: 3' THICKNESS RECEIVED: 10.000

QUANTITY INSPECTED: 3' SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: Ø SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B221
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 4042702
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 12 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221

B

PART NUMBER: M6061T6R|D.DDD|
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 5/8" ROUND BAR = M6061T6R0.625

RELEASED
2009 -09- 09

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD B211& B221 SPEC (ZN D8-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	DS	01.06.08

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.07.13

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M6061T6R REV. B
SHEET 1 OF 1

TITLE 6061-T6 ROUND BAR
SCALE NTS

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15913 N

HYDRO

Hydro Extrusion USA, LLC
53 POTTSVILLE STREET
--
CRESSONA, PA
17929-0187

Certified Test Report

Cert Number	Page
HYDRO2861554	Page 1 of 3

Sales Order Number	Line No.	Customer P/O	Cert Creation Date	Cert Print Date
1101374515	1	5400397994-C1A-0010	24-APR-18	30-APR-18

--

Invoice To Customer

--
--

Ship To Customer

--

Quantity Shipped	Date Shipped	Item Description	Specification
4434 LB	24-APR-18	Extruded Regular Rod 10.000 DIA SECT 542329 144.000 IN LN FIN M-MILL W/F 92.363 F 1 CS 10 6061-T6 Marking CONTINUOUS:	ASTMB221 REV 14 ASMESB221 REV 09 AMS-QQ-A-200/8 REV A UNS#A96061 REV
B/L	**Item No.**		
921960	G03976730		
Delivery Id	**Item No. Rev**		
4994493	--		
CustomerPart No.			
ALRD00259			

Applicable Specifications, Revisions and Exceptions

Straightness will be 0.050 inch/foot maximum
Residual cast structure may remain in finished product because of low reduction ratio.
COMPOSITION NOTE: The values for 'Others Each' and 'Others Total' have met the limits as shown on this certified inspection report. Remainder is Aluminum.

Hydro Extrusion USA, LLC hereby certifies that the metal shipped under this report has been tested in accordance with the identified ASTM and/or ASME specifications and the results of the chemical analysis and mechanical properties tests are within the acceptable ranges of these specifications. Any product warranty is governed by the Extrusion North America Standard Terms and Conditions of Sale posted at www.hydroextrusions.com/termsconditions.

Signature And Title

Darrell Wenrich
Quality Manager

24-APR-18

Quantities per Lot / Packages

Package Number	Lot Number	Quantity	UOM	Weight	
				Gross	Net
G12-PKG3204958	23135192	2	PCS	2223	2217
G12-PKG3204968	23135192	2	PCS	2223	2217

Composition Limits

HYDRO

Hydro Extrusion USA, LLC
53 POTTSVILLE STREET
--
CRESSONA, PA
17929-0187

Certified Test Report

Cert Number	Page
HYDRO2861554	Page 2 of 3

Sales Order Number	Line No.	Customer P/O	Cert Creation Date	Cert Print Date
1101374515	1	5400397994-C1A-0010	24-APR-18	30-APR-18

Alloy	Si		Fe		Cu		Mn		Mg		Cr		Zn	
	PCT (%)		PCT (%)		PCT (%)		PCT (%)		PCT (%)		PCT (%)		PCT (%)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
6061	0.40	0.80	---	0.70	0.15	0.40	---	0.15	0.80	1.20	0.04	0.35	---	0.25

Alloy	Ti		Others Each		Others Total	
	PCT (%)		PCT (%)		PCT (%)	
	Min	Max	Min	Max	Min	Max
6061	---	0.15	---	0.05	---	0.15

Composition Results

Heat / Cast	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others Each	Others Total
4042702	0.77	0.35	0.36	0.12	0.93	0.14	0.05	0.03	--	--
Heat / Cast	**Si**	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Zn**	**Ti**	**Others Each**	**Others Total**
4042730	0.73	0.29	0.33	0.15	0.93	0.14	0.04	0.02	--	--

Mechanical Property - Test Limits

		Test Type	UTS - L		TYS - L		EL 4D-Long	
		UOM	KSI		KSI		PCT	
		# of Test	--		--		--	
Test Temper	Lot Number	# of Tests	MIN Value	MAX Value	MIN Value	MAX Value	MIN Value	MAX Value
T6	23135192	1	53.5	53.5	48.1	48.1	11.5	11.5

Cert Notes

Products manufactured with a T6511 temper also meet T6 temper requirements.

Yield strength has been determined by the 0.2% offset method

All mill finish alloys produced at Sapa Extrusions Inc comply with Directive 2011/65/EU (RoHS 2) with the exception of 6262 alloy

In accordance with EN 10204 Inspection Certificate Type 3.1

For U.S. Government sales: Items supplied are compliant with the Buy American Act, FAR 52.225-1, and DFARS 252.225-7001.

Melted and manufactured in the USA.

Mercury is not a normal contaminant in aluminum alloys and we do not knowingly use it in the manufacture of our goods

HYDRO

Hydro Extrusion USA, LLC
53 POTTSVILLE STREET
--
CRESSONA, PA
17929-0187

Certified Test Report

Cert Number	Page
HYDRO2861554	Page 3 of 3

Sales Order Number	Line No.	Customer P/O	Cert Creation Date	Cert Print Date
1101374515	1	5400397994-C1A-0010	24-APR-18	30-APR-18

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061H654.500X12.000 PO / BATCH NO.: 039776/5070829

DATE: MAY 12 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 17 10PCS

QUANTITY INSPECTED: 17 10PCS

QUANTITY REJECTED: Ø

THICKNESS ORDERED: 4.500

THICKNESS RECEIVED: 4.500

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	AMS-QQ-A-250/11
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat# 12-5826
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 12 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

C PURCHASE MATERIAL: 6061-T6/T62/T651 ALUMINUM SHEET OR PLATE

SPECIFICATION: QQ-A-250/11 OR AMS-QQ-A-250/11
OR AMS 4025 OR 4027
OR ASTM B209

C PART NUMBER: M6061T6S | .XXX THK | X | W.WWW WIDTH |

WHERE ".XXX" = THICKNESS (IN INCHES)
AND "W.WWW" = WIDTH (IN INCHES, OPTIONAL, FOR SPECIFYING CUT PLATE)

EG. 0.063" THICK SHEET = M6061T6S.063
EG. 3.5" WIDE BY 0.500" THICK PLATE = M6061T6S.500X3.500

C PREFERRED SIZE: .XXX BY 4FT BY 8FT FOR SHEET

RELEASED
2018 MAR 13
ECN 18-669

APPROVED

REV.	DESCRIPTION	BY	DATE
C	ADD PLATE AND T651 SPEC	ML	17.12.13
B	REFORMAT DWG, ADD B209 SPEC (ZN D8-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	RF	01.06.08

DESIGN	DS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	ML		
CHECKED	NO	DRAWING NO. M6061T6S	REV. C
MFG. APPR.	JFS		SHEET 1 OF 1
APPROVED	HS	TITLE 6061-T6 SHEET/PLATE SPEC	SCALE NTS
DE APPR.	CP		
DATE	17.12.13		

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15913N

INSPECTION CERTIFICATE № 17.149847

EN 10204 - 3.1

Consigner: KAMENSK URALSKY METALLURGICAL WORKS JOINT STOCK COMPANY
5, Zavodskaya Str., Kamensk Uralsky, Sverdlovsk Region, 623405, Russia Tel: +7 (3439) 39 54 17 Fax: +7 (3439) 39 53 49

Buyer:		Quantity, pcs:	2
Consignee:		Net Weight, kg:	2850
P.O. No:	5400375403-C1A	S.O. No:	N17451
Article No:	ALFLR00112 Item 0030	Item No:	1.3
		Package No:	622124, 622125

Description of Goods: Plates

Requirements on the Product:

Grade of Product	Dimensions, mm (inch)	Material conforms to quality of alloy: 6061 T651
-	4.5"X48.5"X144.5" 114.300X1231.9X3670.3	Product conforms to all requirements of: ASME SB-209 Section II Part B (2010); ASTM B209-14; SAE AMS-QQ-A-250/11A (2008); SAE AMS 4027 Rev. N (2014). This product conforms to European Union RoHS Directive 2011/65/EU

Mechanical Properties

The Condition of Tested Standards	Lot No.	Heat lot No.	HT Charge No.	Sampling direction	Tensile Strength, Rm / Cut ksi		Yeld Strength, Rp0.2% / Clenching test ksi		Elongation, %		Hardness, HBW
					min	max	min	max	min	max	
Required				LT	40.0	-	35.0	-	6	-	-
-	652129	12-5626	12273	LT	46.9	47.2	42.1	42.3	11.2	11.2	-

Chemical Composition, %

Element	Silicon Si	Iron Fe	Copper Cu	Manganese Mn	Magnesium Mg	Chromium Cr	Zinc Zn	Titanium Ti	-	-	-
Required	0.40 - 0.8	0.7	0.15 - 0.40	0.15	0.8 - 1.2	0.04 - 0.35	0.25	0.15	-	-	-
Contents	0.60	0.26	0.17	0.09	1.0	0.05	0.15	0.06	-	-	-

Element	-	-	-	-	-	-	-	-	Other Elements Each	Other Elements Total	Aluminum Al
Required	-	-	-	-	-	-	-	-	0.05	0.15	remainder
Contents	-	-	-	-	-	-	-	-	0.05	0.15	remainder

Other Tests

Method	Macro-structure	Micro-structure	UT	K1c	Electro-conductivity, IACS%	SCF	Contents H2 of metals cm3/100gr
					-	-	MAX 0.25
Result	-	-	-	-	-	-	0.20

Raw material used for manufacturing supplied products was tested for compliance with international radiation safety regulations during incoming inspection. Russia is country of melt and manufacture. No weld repair.

On behalf: KUMZ J.S.Co.

Date: 28.12.2017

QCB Inspector Gureva V.N.

Inspection Department Engineer Alehina N.V.

The Certificate has been agreed electronically.

Form № QAD/3-003, Revision 03

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6S.625
DATE: MAY 12 2018

PO / BATCH NO.: 039776/S070828

MATERIAL CERT REC'D: YES
QUANTITY RECEIVED: 32 PIC
QUANTITY INSPECTED: 32 PIC
QUANTITY REJECTED: Ø

THICKNESS ORDERED: .625
THICKNESS RECEIVED: .625
SHEET SIZE ORDERED: 4X4
SHEET SIZE RECEIVED: 4X4

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	QQ-A-250/11
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # MCN-E-1597
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-BS MAY 12 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

C PURCHASE MATERIAL: 6061-T6/T62/T651 ALUMINUM SHEET OR PLATE

SPECIFICATION: QQ-A-250/11 OR AMS-QQ-A-250/11
~~OR AMS 4025~~ OR 4027
OR ASTM B209

C PART NUMBER: M6061T6S|.XXX|X|W.WWW|
THK|WIDTH|

WHERE ".XXX" = THICKNESS (IN INCHES)
AND "W.WWW" = WIDTH (IN INCHES, OPTIONAL, FOR SPECIFYING CUT PLATE)

EG. 0.063" THICK SHEET = M6061T6S.063
EG. 3.5" WIDE BY 0.500" THICK PLATE = M6061T6S.500X3.500

C PREFERRED SIZE: .XXX BY 4FT BY 8FT FOR SHEET

RELEASED
2018 MAR 13
ECN 18-665

REV.	DESCRIPTION	BY	DATE
C	ADD PLATE AND T651 SPEC	ML	17.12.13
B	REFORMAT DWG, ADD B209 SPEC (ZN D8-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	RF	01.06.08

APPROVED

DESIGN	DS
DRAWN	ML
CHECKED	NO
MFG. APPR.	JFS
APPROVED	HS
DE APPR.	CP
DATE	17.12.13

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M6061T6S REV. C
SHEET 1 OF 1
TITLE 6061-T6 SHEET/PLATE SPEC
SCALE NTS

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Dart

MILL TEST / QUALITY CONTROL CERTIFICATE

NORTHEAST LIGHT ALLOY CO. LTD.

ADDRESS: XINJIANG STREET, PINGFANG DISTRICT HARBIN

FAX: 86-451-88808342
TEL: 86-451-88664263

REF: M17094

No.of Invoice: 17NE-094

PRODUCT: PRIME ALUMINUM PLATE 6061 T651

TEST DATE: 2017-06-30

1. MATERIAL SPECIFICATION:

Alloy/ Temper	LOT NO.	SIZE(MM/INCH)	N.W. (MT/LBS)	G.W. (MT/LBS)	PCS	PLTS	Order No.	HEAT NO.
6061T651	LT01097	9.53x1231.9x3670.3 (0.375"X48.5"X144.5")	1.804 3977	1.894 4176	15	1	R153879	17CN-E-1744
6061T651	LT01097	9.53x1231.9x3670.3 (0.375"X48.5"X144.5")	1.924 4242	2.014 4440	16	1	R153879	17CN-E-1745
6061T651	T00131/T00132/ T00133-1	9.53x1231.9x2461.1 (0.375"X48.5"X96.5")	2.466 5437	2.526 5569	31	1	R153879	17CN-E-1736
6061T651	T00140-1/1/T00141-1/T00142/T2653	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.812 3995	1.912 4216	12	1	R153879	17CN-E-1738
6061T651	T00883	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	2.792 6155	2.882 6354	14	1	R154148	17CN-E-1647
6061T651	T00884	31.75x1231.9x3670.3 (1.25"X48.5"X144.5")	2.74 6041	2.83 6239	7	1	R154152	17CN-E-1611
6061T651	T00885	50.8x1231.9x3670.3 (2.0"X48.5"X144.5")	1.886 4158	1.976 4356	3	1	R154152	17CN-E-1615
6061T651	T00885	50.8x1231.9x3670.3 (2.0"X48.5"X144.5")	1.26 2778	1.35 2976	2	1	R154152	17CN-E-1616
6061T651	T00888	9.53x1231.9x3670.3 (0.375"X48.5"X144.5")	1.736 3827	1.826 4026	14	1	R154153	17CN-E-1748
6061T651	T00889	12.7x1231.9x3670.3 (0.500"X48.5"X144.5")	2.658 5639	2.648 5838	16	1	R154153	17CN-E-1757
6061T651	T00890	12.7x1231.9x3670.3 (0.500"X48.5"X144.5")	2.412 5317	2.502 5516	15	1	R154153	17CN-E-1746
6061T651	T00891	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.59 3506	1.68 3704	8	1	R154153	17CN-E-1625
6061T651	T00891	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.396 3078	1.486 3276	7	1	R154153	17CN-E-1626
6061T651	T00892	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	1.928 4250	2.018 4449	8	1	R154153	17CN-E-1632
6061T651	T00892	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	0.962 2121	1.052 2319	4	1	R154153	17CN-E-1633
6061T651	T00894	12.7x1231.9x3670.3 (0.500"X48.5"X144.5")	2.556 5635	2.646 5833	16	1	R154173	17CN-E-1753
6061T651	T00898	12.7x1231.9x2461.1 (0.500"X48.5"X96.5")	2.478 5463	2.538 5595	23	1	R154173	17CN-E-1735

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6061T651	T00899	12.7x1231.9x2451.1 (0.500"X48.5"X96.5")	2.574 5675	2.634 5807	24	1	R154173	17CN-E-1734
6061T651	T00905	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	2.15 4740	2.24 4938	9	1	R154173	17CN-E-1684
6061T651	T00906	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	2.396 5282	2.480 5461	10	1	R154173	17CN-E-1682
6061T651	T00906	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	1.918 4228	2.008 4427	8	1	R154173	17CN-E-1683
6061T651	T00907	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	1.434 3161	1.524 3360	6	1	R154173	17CN-E-1686
6061T651	T00908	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	1.918 4228	2.008 4427	8	1	R154173	17CN-E-1617
6061T651	T00908	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	2.156 4753	2.246 4952	9	1	R154173	17CN-E-1618
6061T651	T00913	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.592 3510	1.682 3708	5	1	R154173	17CN-E-1672
6061T651	T00913	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.586 3496	1.676 3695	5	1	R154173	17CN-E-1681
6061T651	T00914	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.594 3514	1.684 3713	5	1	R154173	17CN-E-1661
6061T651	T00914	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.596 3519	1.686 3717	5	1	R154173	17CN-E-1662
6061T651	T00915	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.61 3549	1.7 3748	5	1	R154173	17CN-E-1663
6061T651	T00915	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.284 2831	1.374 3029	4	1	R154173	17CN-E-1664
6061T651	T00136/T00130-1/T00129-1	9.53x1231.9x3670.3 (0.375"X48.5"X144.5")	1.446 3188	1.636 3386	12	1	R154295	17CN-E-1739
6061T651	T01179	12.7x1231.9x3670.3 (0.500"X48.5"X144.5")	1.9 4189	1.99 4387	12	1	R154295	17CN-E-1691
6061T651	T01180	12.7x1231.9x3670.3 (0.500"X48.5"X144.5")	2.41 5313	2.5 5512	15	1	R154295	17CN-E-1692
6061T651	T01187	19.05x1231.9x3670.3 (0.75"X48.5"X144.5")	2.42 5335	2.51 5534	10	1	R154295	17CN-E-1590
6061T651	T01192	9.53x1231.9x2451.1 (0.375"X48.5"X96.5")	1.718 3788	1.778 3920	21	1	R154318	17CN-E-1693
6061T651	T01193	9.53x1231.9x2451.1 (0.375"X48.5"X96.5")	1.438 3170	1.498 3302	18	1	R154318	17CN-E-1752
6061T651	T00861	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.97 4343	2.07 4564	13	1	R154318	17CN-E-1514
6061T651	T00861	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.96 4321	2.06 4541	13	1	R154318	17CN-E-1515
6061T651	T00862	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.95 4299	2.05 4519	13	1	R154318	17CN-E-1516
6061T651	T00862	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.8 3968	1.9 4189	12	1	R154318	17CN-E-1517
6061T651	T00863	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.5 3307	1.6 3527	10	1	R154318	17CN-E-1584
6061T651	T00863	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.5 3307	1.6 3527	10	1	R154318	17CN-E-1585

6061T651	T00864	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.49 3285	1.59 3505	10	1	R154318	17CN-E-1518
6061T651	T00864	9.53x1536.7x3670.3 (0.375"X60.5"X144.5")	1.49 3285	1.59 3505	10	1	R154318	17CN-E-1519
6061T651	T01205	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.406 3100	1.496 3296	7	1	R154318	17CN-E-1596
6061T651	T01205	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.402 3091	1.492 3289	7	1	R154318	17CN-E-1597
6061T651	T01206	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.396 3078	1.486 3276	7	1	R154318	17CN-E-1599
6061T651	T01206	15.88x1231.9x3670.3 (0.625"X48.5"X144.5")	1.2 2646	1.29 2844	6	1	R154318	17CN-E-1600
6061T651	T01236	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.582 3488	1.672 3686	5	1	R154318	17CN-E-1554
6061T651	T01236	25.4x1231.9x3670.3 (1.0"X48.5"X144.5")	1.268 2795	1.358 2994	4	1	R154318	17CN-E-1555
6061T651	T01241	25.4x1231.9x2451.1 (1.0"X48.5"X96.5")	2.338 5154	2.398 5287	11	1	R154318	17CN-E-1685
6061T651	T00191	50.8x1536.7x3670.3 (2.0"X60.5"X144.5")	1.568 3457	1.668 3677	2	1	R154318	17CN-E-1150
6061T651	T00192	50.8x1536.7x3670.3 (2.0"X60.5"X144.5")	1.562 3444	1.662 3664	2	1	R154318	17CN-E-1139
6061T651	T00193	50.8x1536.7x3670.3 (2.0"X60.5"X144.5")	1.572 3466	1.672 3686	2	1	R154318	17CN-E-1151

2.CHEMICAL COMPOSITION:

LOT NO.	Cu	Mg	Mn	Fe	Si	Zn	Ni	Cr	Ti	Others Total	Al
LT01097	0.19	0.90	<0.15	0.37	0.55	<0.20	<0.05	0.15	<0.10	0.15	Bal
T00131	0.23	1.00	<0.15	0.45	0.65	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00132	0.22	1.00	<0.15	0.41	0.63	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00136-1	0.19	0.97	<0.15	0.46	0.56	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00140-1	0.20	0.97	<0.15	0.39	0.55	<0.20	<0.05	0.15	<0.10	0.15	Bal
LT00141-1	0.21	1.02	<0.15	0.40	0.58	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00140	0.20	1.01	<0.15	0.37	0.59	<0.20	<0.05	0.15	<0.10	0.15	Bal
T9663	0.20	1.01	<0.15	0.37	0.59	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00883	0.24	0.98	<0.15	0.37	0.67	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00884	0.22	1.01	<0.15	0.38	0.68	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00885	0.24	0.96	<0.15	0.37	0.67	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00888	0.21	1.02	<0.15	0.38	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00889	0.20	0.99	<0.15	0.35	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00890	0.21	1.03	<0.15	0.42	0.64	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00891	0.22	1.01	<0.15	0.36	0.66	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00892	0.21	1.03	<0.15	0.36	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00894	0.24	0.96	<0.15	0.37	0.67	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00898	0.22	1.04	<0.15	0.37	0.65	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00899	0.22	1.01	<0.15	0.36	0.66	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00905	0.20	0.99	<0.15	0.35	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00906	0.20	1.04	<0.15	0.39	0.65	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00907	0.20	1.04	<0.15	0.39	0.65	<0.20	<0.05	0.16	<0.10	0.15	Bal

T00908	0.21	1.03	<0.15	0.38	0.63	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00913	0.22	1.05	<0.15	0.37	0.65	<0.20	<0.06	0.17	<0.10	0.15	Bal
T00914	0.22	1.02	<0.15	0.36	0.65	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00915	0.22	1.01	<0.15	0.38	0.68	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00136	0.19	0.97	<0.15	0.46	0.56	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00130-1	0.19	0.97	<0.15	0.46	0.56	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00129-1	0.21	1.04	<0.15	0.40	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T01179	0.21	1.05	<0.15	0.43	0.64	<0.20	<0.05	0.16	<0.10	0.15	Bal
T01180	0.21	0.97	<0.15	0.39	0.64	<0.20	<0.05	0.16	<0.10	0.15	Bal
T01187	0.21	0.97	<0.15	0.39	0.64	<0.20	<0.05	0.16	<0.10	0.15	Bal
T01192	0.20	1.01	<0.15	0.37	0.60	<0.20	<0.05	0.15	<0.10	0.15	Bal
T01193	0.21	0.97	<0.15	0.39	0.64	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00861	0.22	0.99	<0.15	0.43	0.68	<0.20	<0.05	0.15	<0.10	0.15	Bal
T00862	0.20	1.01	<0.15	0.39	0.62	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00863	0.23	1.01	<0.15	0.43	0.69	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00864	0.20	1.03	<0.15	0.39	0.63	<0.20	<0.05	0.16	<0.10	0.15	Bal
T01205	0.22	1.01	<0.15	0.36	0.66	<0.20	<0.05	0.17	<0.10	0.15	Bal
T01206	0.22	1.04	<0.15	0.37	0.65	<0.20	<0.05	0.17	<0.10	0.15	Bal
T01236	0.21	1.03	<0.15	0.36	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T01241	0.20	0.99	<0.15	0.35	0.63	<0.20	<0.05	0.17	<0.10	0.15	Bal
T00191	0.20	0.93	<0.15	0.36	0.61	<0.20	<0.05	0.15	<0.10	0.15	Bal
T00192	0.20	1.01	<0.15	0.39	0.62	<0.20	<0.05	0.16	<0.10	0.15	Bal
T00193	0.22	0.99	<0.15	0.43	0.68	<0.20	<0.05	0.15	<0.10	0.15	Bal

All figures are weight percent, single figures indicate maxima.

3.MECHANICAL PROPERTIES:

Tensile properties conform to AA specifications and are measured in the transverse direction.

LOT NO.	TENSILE STRENGTH(ksi)	YIELD STRENGTH (ksi)	Percentage elongation after fracture(%)
LT01097	42.9	37.1	18.10
T00131	45.1	39.9	16.70
T00132	45.0	39.9	16.20
T00130-1	43.8	38.6	17.10
T00140-1	44.2	38.4	18.00
LT00141-1	43.8	38.6	17.90
T00140	43.9	38.4	18.00
T9668	44.1	38.7	17.80
T00883	44.1	40.2	15.00
T00884	43.9	39.7	16.80
T00885	45.0	40.9	12.70
T00888	43.5	38.3	17.00
T00889	44.4	39.5	15.40
T00890	44.8	39.6	16.10
T00891	43.8	39.7	15.90
T00892	43.8	39.2	13.20
T00894	44.2	39.2	15.90
T00898	45.0	40.6	16.00
T00899	45.0	40.5	15.60
T00905	44.2	40.2	14.40
T00906	44.7	40.5	14.00
T00907	44.2	39.9	14.40
T00908	44.5	40.0	14.20
T00913	43.2	38.4	15.70

T00914	44.5	40.2	15.10
T00915	43.8	39.7	15.00
T00136	43.9	38.9	15.20
T00130-1	45.0	41.3	13.40
T00129-1	45.0	40.1	15.10
T01179	45.3	40.6	15.20
T01180	44.8	39.9	14.80
T01187	45.0	39.9	16.30
T01192	43.9	39.4	17.80
T01193	44.3	40.0	16.10
T00861	43.2	38.6	16.30
T00862	43.9	39.0	15.70
T00863	42.9	37.4	18.00
T00864	44.5	39.9	16.50
T01205	45.0	41.3	15.80
T01206	44.7	40.8	15.60
T01236	44.2	39.6	14.50
T01241	43.7	39.6	14.50
T00191	46.0	42.1	14.40
T00192	44.2	40.0	13.00
T00193	45.8	41.8	12.50

4. TOLERANCE:

Lot No.	Thickness Tolerance	Width Tolerance	Length Tolerance
LT01007	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00131	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00132	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00136-1	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00140-1	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
LT00141-1	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T00140	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T9663	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T00883	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00884	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T00885	-0/+0.055 in.	-0/+0.157 in.	-0/+0.157 in.
T00888	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00889	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00890	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00891	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00892	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T00894	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00898	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00899	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T00905	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T00906	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T00907	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T00908	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T00913	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T00914	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T00915	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T00136	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.

T00130-1	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00129-1	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T01179	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T01180	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T01187	-0/+0.031 in.	-0/+0.157 in.	-0/+0.157 in.
T01192	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T01193	-0/+0.017 in.	-0/+0.157 in.	-0/+0.157 in.
T00861	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T00862	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T00863	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T00864	-0/+0.020 in.	-0/+0.157 in.	-0/+0.157 in.
T01205	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T01206	-0/+0.023 in.	-0/+0.157 in.	-0/+0.157 in.
T01236	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T01241	-0/+0.039 in.	-0/+0.157 in.	-0/+0.157 in.
T00191	-0/+0.060 in.	-0/+0.157 in.	-0/+0.157 in.
T00192	-0/+0.060 in.	-0/+0.157 in.	-0/+0.157 in.
T00193	-0/+0.060 in.	-0/+0.157 in.	-0/+0.157 in.

1/2AA tolerances apply

5. SQUARENESS: Maximum difference between diagonals (inches):

Lengths 96.5 inches	0.040xwidth,ft
Lengths 144.5 inches	0.066xwidth,ft

6. FLATNESS: Allowable deviation from Flat(inches):

Longitudinal flatness 3/32 inch in any 6 ft or less	Short-span flatness	
	0.375-0.500 in.	0.050 inch in any 2 ft or less
	0.625-2.0 in.	0.038 inch in any 2 ft or less
Transverse flatness		
Thickness: 0.375-0.5 in	3/16 in.	
Width: 48.5-60.5 in.		
Thickness: 0.625-1.0 in	5/32 in.	
Width: 48.5 in.		
Thickness: 2.0 in	3/32 in.	
Width: 48.5-60.5 in.		

7. Lateral Bow: Max deviation from a straight edge: 0.1 inch
1/2AA tolerances apply

8. Surface quality:

- Brushed finish.
- Edge burr must be small enough not to cause interference when packing.
- Scratches that cannot be felt with the fingernail are acceptable on the surfaces.
- Max number of indentations:1 in any surface area measuring 3ftx3ft.

9. Packing: On wooden pallet, securely for export, with suitable dessicant included (6 bags at least).

产品合格证
专用章

10. Plate Marking: Each plate will be line marked showing the following:

- Alloy and temper
- Nominal thickness(inches)
- Lot No.
- Specification:ASTM-B209 AMS 4027 ASME-SB209 AMS-QQA 250/11
- Producer: NELA

11. Labeling: Each pack shall be labeled with the following information:

- Aluminium Alloy Plate
- Customer:
- Alloy & Temper
- Size(inches):
- Order No.
- Pallet No.
- Made in China
- Lot number
- N.W. (kg)
- G.W. (kg)
- No. of PCS

MATERIAL CONFORMS AMS QQA250/11, AMS 4027, ASTM B209 SB-209 IN ALL RESPECTS

CHIEF INSPECTOR:

产品合格证
专用章

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M303R0.375
DATE: MAY 11 2018

PO / BATCH NO.: 039776/5070824

MATERIAL CERT REC'D: Yes
QUANTITY RECEIVED: 391
QUANTITY INSPECTED: 39
QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.375
THICKNESS RECEIVED: 0.375
SHEET SIZE ORDERED: ~~0.375~~ N/A
SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A582
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 688E
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS	SIGNED OFF BY:
DATE: MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 303 SS ROUND BAR
(NOTE: AISI 304/316 NOT ACCEPTABLE)

B SPECIFICATION: ASTM A582

PART NUMBER: M303R D.DDD
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 0.75" ROUND BAR = M303R0.750

RELEASED
2010 -02- 02

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD SPECS (ZN D8-1), REF PAR 08-020A	CP	10.01.05
A	NEW ISSUE	DS	01.12.20

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. M303R — REV. B — SHEET 1 OF 1
MFG. APPR.		
APPROVED		TITLE: 303 ROUND BAR — SCALE: NTS
DE APPR.		
DATE	10.01.05	

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87288 Dart 16150N

North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 383542 2 Mail To:

Ship To: 209627

Customer: 007060 001

Date: 2/20/2018 Page: 1

Steel: 303

Finish: CD

Your Order: C113057

NAS Order: PN 0089721 01 Heat Treat Code: 45,401

Corrosion:

PRODUCT DESCRIPTION:

Round Bar, Annealed, Cold Draw
UNS 30300, ASTM A582/12 EN 10204 3.1, ASTM A484/16
AMS 5640V TYPE 1, QQS-764B CONDITION A
SOLUTION ANNEAL TEMP 1900F MIN, ASTM F899/12b

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE 2011/65/EU.RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Product Id	Skid #	Diameter	Size	Weight	Length	Mark	Pieces	Commodity Code
BJ2863 9		.3750		1,109	144.00	57	1	

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323
Chemical Analysis per ASTM A751/14a

NAS Heat	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
688E	US	.047	.11	17.12	.34	1.91	.285	.017	8.59	.033

S %	SI %
.3140	.49

MECHANICAL PROPERTIES

Product Id	Loc	Dir	HB No.	.2YS KSI	UTS KSI	RA %	Elng % 2"
BJ2863 9	R	L	216.0	76.80	113.68	53.35	31.85

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written

Technical

Order - Factory

Copy CO00087288

Product Description	Weight	Qty	UM	PCS NB			Internal Use Only				
				CMD	EXP	B/O	IN	I	S	C	OUT
LINE#5 *HEAT : 892190*											
6 FLAT ALU 3/4 X 1 1/2 6061-T6 * FAL-34112 **2584** *1 X 20'* *LINE#6* *HEAT: 68549*		0.00	PI_$CLB	0.00							
7 ROUND SS 7/16 304 (R) RSS-716 **5779** *1 X 13'3"* *LINE#7* *HEAT: CH-6643*		0.00	PI_$CLB	0.00							
8 ROUND SS 3/8 304 (R) RSS-38 **5768** *1 X 12'1"* *LINE#8* *HEAT: 646M*		0.00	PI_$CLB	0.00							
9 ROUND 4140 HEAT TREAT 1 (R) R4140-1H **4919** *1 X 12'* *LINE#9* *HEAT: 177569*		0.00	PI_$CLB	0.00							
10 ROUND 4140 HEAT TREAT 1 1/2 (R) R4140-112H **4893** *1 X 5'-4" OFF CUT* *LINE#10* *HEAT: A173444*		0.00	PI_$CLB	0.00							
11 ROUND SS 3/8 303 (R) RSS-38303 **5765** *3 X 13'* *LINE#11* HEAT 688E		0.00	PI_$CLB	0.00							

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-4140-S-0.500X10.000 PO / BATCH NO.: 039776/5070827

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 4'

QUANTITY INSPECTED: 4'

QUANTITY REJECTED: Ø

THICKNESS ORDERED: 0.500

THICKNESS RECEIVED: 0.500

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	(N)	
CORRECT FINISH	(Y)	N	
CORROSION	Y	(N)	
CORRECT GRAIN DIRECTION	(Y)	N	
CORRECT MATERIAL PER M-DRAWING	(Y)	N	Astm A829
CORRECT THICKNESS	(Y)	N	
PHOTO REQUIRED	Y	(N)	
CORRECT REF # TO LINK CERT	(Y)	N	Heat# 300188
CORRECT MATERIAL IDENTFICATION	(Y)	N	
CORRECT M# ON THE MATERIAL	(Y)	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	(N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	(N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

REV.	DESCRIPTION	ECN #	DATE	BY	APPROV
A	NEW ISSUE	18-544	18.2.13	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 / 4142 STEEL SHEET OR PLATE
MINIMUM ROCKWELL C = 28 Rc
MAXIMUM ROCKWELL C = 32 Rc

SPECIFICATION: ASTM A829, AMS 6395

PART NUMBER: MT-4140-S-[T.TTT] x [W.WWW]
WHERE "T.TTT" = THICKNESS IN INCHES
WHERE "W.WWW" = WIDTH IN INCHES (OPTIONAL FOR SPECIFYING CUT PLATE)

EX. 0.063" THICK SHEET = MT-4140-S-0.063
EX. 3.5" WIDE BY 0.500" THICK PLATE = MT-4140-S-0.500X3.500

DART AEROSPACE Hawkesbury, Ontario, Canada

TITLE: AISI 4140 / 4142 STEEL SHEET OR PLATE

PART NO.: MT-4140-S REV: A

TOOL NO.: -

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
INTERPRET PER ASME Y14.5M-2009
DIMENSIONS APPLY AFTER FINISHING

	INITIALS AND DATE
DESIGNED BY:	VM 2/13/2018
DRAWN BY:	VM 02/13/2018
CHECKED BY:	VM 02/13/2018
MFG REVIEW BY:	DD 02/13/2018
APPROVED BY:	ML 02/14/2018

TOLERANCES:
.XXX ± .005
.XX ± .01
.X ± .1
FRACTIONS ± 1/8
ANGLES ± .5°
SURFACE ROUGHNESS

SCALE: NTS SHEET 1 OF 1

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288 Dart. 15947N

Chemical certification
Certification chimique

Order Num / No. Commande	Vendor / Fournisseur	Country of origin / Pay d'origine	Date	Heat / coulée	Material ID # / No matérie
15947	46	SLOVENIA	04/28/17	300188	

Grade / Nuance	Conditions
4140 PLT	HEAT TREATED; Q&T E+VD

Shape / Forme	Size / Dimension	Specifications
PLT	0.500	ASTM A829/A829M

Chemical composition / Analyse chimique

	Carbon (C)	Silicon (Si)	Manganese (Mn)	Phosphorus (P)
Mini / maxi	0.3700 / 0.4400	0.1500 / 0.3500	0.6500 / 1.1000	0.0100 / 0.0190
Actuel %	0.400	0.227	0.814	0.008
	Sulphur (S)	**Chromium (Cr)**	**Nickel (Ni)**	**Molybdenum (Mo)**
Mini / maxi	0.0200 / 0.0400	0.7500 / 1.2000	0.1000 / 0.2000	0.1500 / 0.2500
Actuel %	0.001	0.970	0.240	0.170
	Cooper (Cu)	**Vanadium (V)**	**Aluminum (Al)**	**Tungsten (W)**
Mini / maxi	0.1900 / 0.2900	0.0400 / 0.0500	0.0000 / 0.0000	0.0000 / 0.0000
Actuel %	0.178	0.035	0.025	0.000
	Cobalt (Co)	**Titanium (Ti)**		
Mini / maxi	0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000
Actuel %	0.000	0.000	0.000	0.000	0.000

Mechanical properties / Propriétés Mécaniques

Yield strenght / Élasticité	Tensile / Rés. à la traction	Elongation / Allon. (%)	Red. of area / Surface (%)	RC	Surface Hd / Dureté
0.000 PSI	0.000 PSI	0.00	0.00		299-305 BHN

Note:

We certify that the above data has been verified and are conform to an original mill or supplier certificate supplied to us with the material

Nous certifions que les données ci haut on été vérifier et sont conformes d'après un certificat originale qui nous a été fourni par notre fournisseur

Prepared by: / Préparé par:

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-A513-T-1.000W0.120 PO / BATCH NO.: 039776/5070826

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 112'

QUANTITY INSPECTED: 112'

QUANTITY REJECTED: Ø

THICKNESS ORDERED: W0.120

THICKNESS RECEIVED: W0.120

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A513 Type 5
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # B721446
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11 9-89	SIGNED OFF BY:
DATE: MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

REV.	DESCRIPTION	ECN #	DATE	BY	APPROVED
A	NEW RELEASE	17-655	17.09.06	VM	WM
B	TYPE 5 ADDED, TEMPLATE UPDATED	17-790	17.12.13	VM	ML

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: ASTM A513 TYPE 5 (1020/1026) SEAMLESS ALLOY STEEL ROUND TUBING (DOM)

SPECIFICATION: ASTM A513 TYPE 5

PART NUMBER: MT-A513-T-[D.DDD]W[T.TTT]

WHERE D.DDD IS OUTSIDE DIAMETER IN INCHES

WHERE T.TTT IS WALL THICKNESS IN INCHES

EG. 3/4" ROUND TUBING WITH .120" WALL THICKNESS = MT-A513-T-0.750W0.120

DART AEROSPACE Hawkesbury, Ontario, Canada

TITLE: ASTM A513 TYPE 5 (1020/1026) ALLOY STEEL ROUND TUBING (DOM)

PART NO.: MT-A513-T — REV: B

TOOL NO.: –

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES INTERPRET PER ASME Y14.5M-2009 DIMENSIONS APPLY AFTER FINISHING

	INITIALS AND DATE
DESIGNED BY:	VM 17/12/13
DRAWN BY:	VM 12/13/2017
CHECKED BY:	ML 12/20/2017
MFG REVIEW BY:	DP 12/20/2017
APPROVED BY:	ML 12/20/2017

TOLERANCES: .XXX ± .005, .XX ± .01, .X ± .1; FRACTIONS ± 1/8, ANGLES ± .5°, SURFACE ROUGHNESS

SCALE: NTS — SHEET 1 OF 1

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6505 TME-1000120 50903 TRA-2689

TPI Work Test Certificate

TUBE INVESTMENTS OF INDIA LIMITED
TUBE PRODUCTS OF INDIA - MODULE - 1
POST BOX NO.4 & 18, M.T.H. ROAD, AVADI, CHENNAI - 600054

INDIA

murugappa

Customer Order No.	: BC8306 /16-AUG-17	TC No	: PAE/BC17A0712
	: /	Date	: 23-OCT-17
Description	: PRECISION STEEL TUBES - CDW	Invoice No	: 300202000352
Specification	: ASTM A513/A513M-15 T5 C1020	Invoice Date	: 16-OCT-17
Condition	: SRA	Job /Batch No	: RBCL1710100
Bundle No's	: 017017526,017017527,017017567,017017586		

Cust Part No :
Bundle : CUSTOMER SIZE /CONDITION /QUANTITY /GROSS WEIGHT /TAG MARKING / WO.NO. / SPEC & GRADE /DESTINATION / BUNDLE NO /COUNTRY OF ORIGIN.
Tagging
Tube Marking : P.O.NO. /TPI-ED /SIZE /SPEC /CONDITION/ TAG MARKING/ HEAT NO. /MADE IN INDIA.
P. Uom : Inches
Size : 1.000" OD X 0.760" ID X 0.120" WT X 20'- 24' RL

Quantity In : 6073.228 Ft

LADLE ANALYSIS :

Process	Heat No.	%C	%Mn	%P	%S	%Si	%Al	%Cr	%Ni	%Cu	%Nb
Min		.18	.3								
Max		.23	.6	.035	.035						
Obs	E721446	.205	.55	.018	.003	.115	.04				

Full Section Longitudinal Tensile Test at Room Temp

Test	Heat No	YS	TS	Elng.
Min		379	448	10
Max				
		MPA	MPA	%
OBS	E721446	462.87	544.56	26

Rockwell Hardness	Roughness OD	Roughness ID
75		
HRB		
85		-

Dimensions in inches

Spec	OD	ID	WT	Len
Min	1	.756		240
Max	1.005	.76		288
OBS-Min	1.001	.759	0	267.285
OBS-Max	1.003	.759	0	284.016

Technological Tests :

Test	Spec	Result
Crushing		-
Flaring		-
Flattening		-
Flanging		-
Rev. Flang.		-
Elng.Gaug.Len		

Non-Destructive Tests :

Test	Spec	Result
Straightness	0.76/1000 MM MAX	0.30 / 1000
Eddy Current	100	100% TESTED OK
Visual		DEFECT FREE
Ultrasonic Test		-
Application Testing		

This is to certify that the goods are supplied as per the purchase order and specification Requirements

Prepared by : N. Anandraj

Quality Shift Incharge Signature:

for Tube Investments of India
Unit: Tube Products of India

Mathaiyan.M
Mgr-Quality-IBP-TP

TOM1120

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M303R0.750 PO / BATCH NO.: 039776/5020825

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: 0.750

QUANTITY RECEIVED: 36' THICKNESS RECEIVED: 0.750

QUANTITY INSPECTED: 36' SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: 0 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A582
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 572C
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 303 SS ROUND BAR
(NOTE: AISI 304/316 NOT ACCEPTABLE)

B SPECIFICATION: ASTM A582

PART NUMBER: M303R D.DDD
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 0.75" ROUND BAR = M303R0.750

RELEASED
2010 -02- 02

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD SPECS (ZN D8-1), REF PAR 08-020A	CP	10.01.05
A	NEW ISSUE	DS	01.12.20

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. M303R — REV. B — SHEET 1 OF 1
MFG. APPR.		
APPROVED		TITLE 303 ROUND BAR — SCALE NTS
DE APPR.		
DATE	10.01.05	

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#5761

North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 363775 3 Mail To: Ship To:

Date: 12/15/2017 Page: 1

Customer: 007036 501

Steel: 303

Finish: CD

Corrosion:

Your Order: 4500835654 NAS Order: PN 0086203 02 Heat Treat Code: 43,719

PRODUCT DESCRIPTION:

Round Bar, Annealed, Cold Draw
UNS 30300, ASTM A582/12 EN 10204 3.1, ASTM A484/16
AMS 5640V TYPE 1, QQS-764B CONDITION A
SOLUTION ANNEAL TEMP 1900F MIN, ASTM F899/12b

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE 2011/65/EU.RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Product Id	Skid #	Diameter	Size	Weight	Length	Mark	Pieces	Commodity Code
BJ0636 8		.7500		1,053	144.00	5	1	160008217

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/14a

NAS Heat	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
572C	US	.036	.13	17.01	.28	1.97	.267	.048	8.49	.030

S %	SI %
.3405	.50

MECHANICAL PROPERTIES

Product Id	Loc	Dir	HB No.	.2YS KSI	UTS KSI	RA %	Elng % 4D
BJ0636 8	R	L	203.0	66.40	109.81	36.18	24.21

363883

P014341

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical Dept. Mgr. KRIS LARK 12/15/2017

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4140H-R1.500
DATE: MAY 11 2018

PO / BATCH NO.: 039776/S070823

MATERIAL CERT REC'D: yes
QUANTITY RECEIVED: 5'
QUANTITY INSPECTED: 5'
QUANTITY REJECTED: 0

THICKNESS ORDERED: 1.500
THICKNESS RECEIVED: 1.500
SHEET SIZE ORDERED: N/A
SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A193
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # A173444 / lot ~~Heat~~ # 5538982
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. M4140H-R	REV. A SHEET 1 OF 1
DATE 05.02.21		TITLE 4140 ROUND BAR	SCALE 1:1
A	05.02.21	NEW ISSUE	

PURCHASE MATERIAL: AISI 4140H ROUND BAR

PER AISI 4140 OR ASTM A304-02 / -A-434-BC /

-A193-03-GRADE-B7 / -A29-03 / -A322-91 OR

UNS # - G41400

MINIMUM ULTIMATE TENSILE STRENGTH = 100 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi

PART NUMBER: M4140H-R | D.DDD DIA | WHERE D.DDD = DIAMETER IN INCHES

EG. 7/8" ROUND BAR = M4140H-R0.875

RELEASED
05 03 15

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~~#4813~~ R4140-112H PO. 13325

50005

NIAGARA LASALLE CORPORATION
1412 150th Street
Hammond IN 46327-1799

CERTIFICATION

CERTIFICATE	Rev
H184077	2
DATE 01/22/18	
PAGE 3	

PURCHASE ORDER B39391
ORDER 960193-1
CUSTOMER ITEM V012142
GRADE QT4140
SIZE 1.5000
LENGTH 20' 0" / 24' 0"
ITEM 141500240Q04A
SHAPE Round
SIZE MM 38.1000 MM
LENGTH MM 6096 / 7315.2

4140/42 CA/AL-TRT QT-HR-STRESS FREE 130K TS 110K YS (.02% 100K) 16% EL 50% R/A SURFACE HBN 269/321 Spec/Rev: Spec/Rev: ASME SA193/SA193M GR-B7 Spec/Rev: ASTM A193/A193M-14 GR-B7 Spec/Rev: ASTM A29/A29M-15 Spec/Rev: ASTM A434-06(2012) CL-BC

HEAT	GRAIN PRACTICE	SOURCE / MELTED	CAST	REDUCTION RATIO	DI
A173444	FINE(5-8)	STEEL DYNAMICS (USA)	BLOOM		5.9

C	MN	P	S	SI	NI	CR	MO	CU	AL	V
0.400	0.850	.009	.016	0.250	0.130	1.030	.210	.260	.034	.003

N	TE	AS	PB	SE	BI	B	NB
.009	N/A	N/A	N/A	N/A	N/A	.0004	N/A

JOB	TENSILE	.2% YIELD	ELONG	R OF A	HARDNESS	.02% YIELD	SR TEMP
H172771	140,541 PSI	122,606 PSI	21.50	59.70		122,116	

JOB	MACRO	SURFACE	AUSTENITIZED			TEMPERED		STRESS	
			TEMPERATURE	TIME	QUENCH	TEMPERATURE	TIME	TEMPERATURE	TIME
H172771		HBN = 285	1640F	2.0 MIN	H20	1350F	1.8 MIN	STRESS FREE	

01	02	03	04	05	06	08	10	12	14	16	20	24	28	32
56	56	56	56	56	56	56	54	50	50	48	46	45	43	40

LOT	JOB	WEIGHT (LBS)	PIECES	LOT	JOB	WEIGHT (LBS)	PIECES
5538982		3,330	25	5540296		1,810	14
5564088		2,240	17				

WE, hereby certify that these goods were produced in compliance with all applicable requirements of sections 6, 7, and 12 of the Fair Labor Standards Act, as ameneded, and all regulations and orders of the United States Department of Labor issued under section 14 thereof. Material was not exposed to mercury or any metal alloy that is liquid at ambient temerature during processing or while in our possession. No weld repairs performed on the above material.

CERTIFICATE OF TEST By: Walter P. Kretzler

Walter P. Kretzler - Director of Q.A./Chief Metallurgist

Order - Factory

Copy CO00087288

Product Description	Weight	Qty	UM	PCS NB CMD	PCS NB EXP	PCS NB B/O	Internal Use Only IN	I	S	C	OUT
LINE#5 HEAT : 892190											
6 FLAT ALU 3/4 X 1 1/2 6061-T6 * FAL-34112 **2584** *1 X 20'* LINE#6 HEAT: 68549	27.00	20.00	PI_$CLB	0.00							
7 ROUND SS 7/16 304 (R) RSS-716 **5779** *1 X 12' R/L* LINE#7 HEAT: CH-6643	6.13	12.00	PI_$CLB	0.00							
8 ROUND SS 3/8 304 (R) RSS-38 **5768** *1 X 12'* LINE#8 HEAT: 646[illegible]	4.51	12.00	PI_$CLB	0.00							
9 ROUND 4140 HEAT TREAT 1 (R) R4140-1H **4919** *1 X 12'* LINE#9 HEAT: 177569	32.04	12.00	PI_$CLB	0.00							
10 ROUND 4140 HEAT TREAT 1 1/2 (R) R4140-112H **4893** *1 X 5'-4" OFF CUT* LINE#10 HEAT: 5538982 A173444	32.56	5.42	PI_$CLB	0.00							
11 ROUND SS 3/8 303 (R) RSS-38303 **5765** *3 X 12' R/L* LINE#11 Heat & mill test	13.54	36.00	PI_$CLB	0.00							

~~#4893~~ R4140-112# PO. 13325

NIAGARA LASALLE CORPORATION
1412 150th Street
Hammond IN 46327-1799

50005

CERTIFICATION

CERTIFICATE	Rev
H184077	2
DATE 01/22/18	
PAGE 3	

PURCHASE ORDER B39391
ORDER 960193-1
CUSTOMER ITEM V012142 ITEM 141500240Q04A
GRADE QT4140 SHAPE Round
SIZE 1.5000 SIZE MM 38.1000 MM
LENGTH 20' 0" / 24' 0" LENGTH MM 6096 / 7315.2

4140/42 CA/AL-TRT QT-HR-STRESS FREE 130K TS 110K YS (.02% 100K) 16% EL 50% R/A SURFACE HBN 269/321 Spec/Rev: Spec/Rev: ASME SA193/SA193M GR-B7 Spec/Rev: ASTM A193/A193M-14 GR-B7 Spec/Rev: ASTM A29/A29M-15 Spec/Rev: ASTM A434-06(2012) CL-BC

HEAT	GRAIN PRACTICE	SOURCE / MELTED	CAST	REDUCTION RATIO	DI
A173444	FINE(5-8)	STEEL DYNAMICS (USA)	BLOOM		5.9

C	MN	P	S	SI	NI	CR	MO	CU	AL	V
0.400	0.850	.009	.016	0.250	0.130	1.030	.210	.260	.034	.003

N	TE	AS	PB	SE	BI	B	NB
.009	N/A	N/A	N/A	N/A	N/A	.0004	N/A

JOB	TENSILE	.2% YIELD	ELONG	R OF A	HARDNESS	.02% YIELD	SR TEMP
H172771	140,541 PSI	122,606 PSI	21.50	59.70		122,116	

JOB	MACRO	SURFACE	AUSTENITIZED			TEMPERED		STRESS	
			TEMPERATURE	TIME	QUENCH	TEMPERATURE	TIME	TEMPERATURE	TIME
H172771		HBN = 285	1640F	2.0 MIN	H20	1350F	1.8 MIN	STRESS FREE	

01	02	03	04	05	06	08	10	12	14	16	20	24	28	32
56	56	56	56	56	56	56	54	50	50	48	46	45	43	40

LOT	JOB	WEIGHT (LBS)	PIECES	LOT	JOB	WEIGHT (LBS)	PIECES
5538982		3,330	25	5540295		1,810	14
5564088		2,240	17				

WE, hereby certify that these goods were produced in compliance with all applicable requirements of sections 6, 7, and 12 of the Fair Labor Standards Act, as amended, and all regulations and orders of the United States Department of Labor issued under section 14 thereof. Material was not exposed to mercury or any metal alloy that is liquid at ambient temerature during processing or while in our possession. No weld repairs performed on the above material.

CERTIFICATE OF TEST By: Walter P. Kretzler

Walter P. Kretzler - Director of Q.A./Chief Metallurgist

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4140 H-R1.000 PO / BATCH NO.: 039776/5070822

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: 1.000

QUANTITY RECEIVED: 12 THICKNESS RECEIVED: 1.000

QUANTITY INSPECTED: 12 SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: Ø SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A193
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat# 177569
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS	SIGNED OFF BY:
DATE: 9-89 11 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. M4140H-R	REV. A SHEET 1 OF 1
DATE 05.02.21		TITLE 4140 ROUND BAR	SCALE 1:1
A	05.02.21	NEW ISSUE	

PURCHASE MATERIAL: AISI 4140H ROUND BAR

PER AISI 4140 OR ASTM A304-02 / -A-434-BC /

-A193-03-GRADE-B7 / -A29-03 / -A322-91 OR

UNS # - G41400

MINIMUM ULTIMATE TENSILE STRENGTH = 100 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi

PART NUMBER: M4140H-R | D.DDD DIA | WHERE D.DDD = DIAMETER IN INCHES

EG. 7/8" ROUND BAR = M4140H-R0.875

RELEASED
05 03 25

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#4919 R4140-1H-V PO.12367 49633

-3p

Eaton Steel Bar Company Inspection Certificate 1686880

EN 10204:2004-3.1

Customer	BOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	222244	13-Dec-2017	B38384	11142 rev 005	506295	1 HR RD 4140/42MM 24ft8in SBQ QTSF FG MST

All bundles listed below were produced using steel from Heat 177569 issued by ALTON STEEL and were completed from Eaton Steel Job 828517.

Chemistry	Description	Value	Units
C	Carbon	0.41000	PWGT
Mn	Manganese	0.89000	PWGT
P	Phosphorus	0.01300	PWGT
S	Sulfur	0.02000	PWGT
Si	Silicon	0.23000	PWGT
Ni	Nickel	0.08900	PWGT
Cr	Chromium	0.84700	PWGT
Mo	Molybdenum	0.15900	PWGT
Al	Aluminum	0.00300	PWGT
Cu	Copper	0.25000	PWGT
V	Vanadium	0.02800	PWGT
Cb	Columbium	0.00300	PWGT
N	Nitrogen	0.01100	PWGT
P+S	Element Sum Limit	0.03300	PWGT
DI	Ideal Diameter	4.94000	IN
Cleanliness	**Description**	**Value**	**Units**
MACRO ETCH	Report macro etch results.		.
Geometry	**Description**	**Value**	**Units**
DIAMETER	Diameter	0.9910 - 1.0090	IN
Jominy	**Description**	**Value**	**Units**
J1	1/16 inch from Quenched End	56	HRC
J2	2/16 inch from Quenched End	56	HRC
J3	3/16 inch from Quenched End	56	HRC
J4	4/16 inch from Quenched End	56	HRC
J5	5/16 inch from Quenched End	56	HRC
J6	6/16 inch from Quenched End	55	HRC
J7	7/16 inch from Quenched End	54	HRC
J8	8/16 inch from Quenched End	52	HRC
J9	9/16 inch from Quenched End	51	HRC
J10	10/16 inch from Quenched End	50	HRC
J11	11/16 inch from Quenched End		HRC
J12	12/16 inch from Quenched End	47	HRC
J14	14/16 inch from Quenched End	45	HRC
J16	16/16 inch from Quenched End	42	HRC
J18	18/16 inch from Quenched End	42	HRC
J20	20/16 inch from Quenched End	41	HRC
J22	22/16 inch from Quenched End		HRC
J24	24/16 inch from Quenched End	39	HRC
J28	28/16 inch from Quenched End	36	HRC
J32	32/16 inch from Quenched End	35	HRC

Mechanical	Description	Value	Units
TENSILE PSI	Tensile Strength in PSI Units	148000	PSI
YIELD PSI	Yield Strength in PSI Units	138000	PSI
ELONGATION	Percent Elongation	17.00	PCT
REDUCTION	Percent Reduction in Area	52.0	PCT
BRINELL SURF	Brinell Surface	271.0	BHN
Heat Treating	**Description**	**Value**	**Units**
TEMPER TEMP F	Temper Temp in Fahrenheit	500 - 2500	DEGF
AUSTEN TEMP F	Austenitize Temp in Fahrenheit	1600 - 1700	DEGF
SR TEMP F	Stress Relief Temp in Fahrenheit	500 - 2500	DEGF
MAGNETISM-HT	Magnetism in Gauss	0 - 20	GN
TIME AT TEMP	Time at Temperature	Report	.
QUENCH MEDIA	Quench Media Requirements	P&W/O	.
STRESS FREE	Cert stress free	CERTIFIED	.
HT4140-42QT	Quench & Temper	CONFORMS	.
Mill Processing	**Description**	**Value**	**Units**
MELT COUNTRY	Melted in Country	USA	.
ROLLED COUNTRY	Rolled in Country	USA	.
RED RATIO	Reduction Ratio	4.94	RED
ASTM Standard	**Description**	**Value**	**Units**
A193/193M-01	Grade B7	CONFORMS	.
A304-05	Carbon & Alloy Steel Bars End Quench Req	CONFORMS	.
A322-13	Steel Bars, Alloy, Standard Grades	CONFORMS	.
A434-90a-BC	ASTMA BC Tensile and Yield properties	CONFORMS	.
Structure	**Description**	**Value**	**Units**
PERCENT TM	Percent Tempered Martensite	80 - 100	PCT
MICROSTRUCTURE	Reported Microstructure	TM	.

Tag Number	Qty	Units	Length
022-2158147	2925	LBS	24ft6in

Bundle tags with Eaton Steel identifiers reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM-00002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.

Created on 13-Dec-2017
Thomas Snabes, Corporate Metallurgist

This document was prepared by means of electronic data processing and is valid without signature.

10221 Capital Avenue, Oak Park, MI 48237 USA
http://www.eatonsteel.com
Tel: 248-398-3434
Fax: 248-398-1434

CERTIFIED MILL TEST REPORT

Alton Steel Test Lab
#5 Cut Street
Alton, IL. 62002-9011
(618) 463-4490 EXT 2406
(618) 463-4491 (Fax)

BILL TO
Eaton Steel Corporation
10721 Capital Avenue
Oak Park, MI 48237

SHIP TO
Eaton Steel Corporation
c/o Apollo Heat Treat
10400 Capital Street
Oak Park, MI 48237

Date	08/25/2017	Customer PO	163357-MS	**Specifications**
ASI Ord No.	87517	Customer PT.	10913	SAE 4140
ASI Ord Line Item	1			ASTM A 304-11, ASTM A 322-07

Item Description
Steel Bar, Hot Rolled, 1.0000, 25' 0 "

Strand Cast, RR =62.39:1

Heat Number | **Yield PSI** | **Tensile PSI** | **% Elongation** | **% RDA** | **Bend Test**

CHEMICAL ANALYSIS TEST METHODS ASTM E-415 & E-1019

Heat Number	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	Nb/Cb	V	B	Ti	N	Ca
177569	0.41	0.89	0.013	0.020	0.23	0.25	0.089	0.847	0.159	0.011	0.003	0.003	0.028	0.0003	0.0001	0.0110	0.0019

JOMINY HARDENABILITY USING ASTM A-255 CALCULATED FROM CHEMICAL DI

Heat Number	GS	DI	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
177569	7	4.94	58	56	56	56	56	55	54	52	51	50	47	45	42	42	41	39	36	35

SPECIAL TEST RESULTS

	ASTM E-45 Method A:								ASTM E-45 Method C:		SAE J422		ASTM E-381			Charpy		Hardness		
Heat Number	TA	TB	TC	TD	HA	HB	HC	HD	S	O	S	O	S	R	C			RC	RB	BHN
177569													1	2	2					

ADDITIONAL COMMENTS

No mercury, lead, nickel, or alpha containing material or equipment is used or deliberately added in the production of this steel. No weld or weld repairs were performed on this material. This steel is 100% Electric Arc Furnace Melted and Rolled in the U.S.A. Material qualifies as NAFTA origination.

Subscribed and sworn to before me, a Notary Public, in and for the county of Madison, State of Illinois

On _____ Day of _____

My commission expires_____

(Notary Public)

Alteration or reproduction of this report, except in full, is not allowed without written approval by a representative of Alton Steel Incorporated.

I hereby certify that the above tests are correct as contained in the records of ALTON STEEL INCORPORATED

Quality Leader: Scott Hall

Scott Hall

GERDAU

Huntington Facility - Test Report

25 Commercial Road, Huntington, IN 46750
(260) 356-9520
fax (260) 356-9522

Printed: 10/24/2017 11:10 AM

Sales Order	41745	Customer Name	EATON STEEL CORPORATION
Heat Number	177569	Location	10221 CAPITAL AVE.
Size	1.0000		OAK PARK, MI 48237
Turned OD	1.0000		
Grade	4140		

Test Remarks: 1 HR RD 4140/42MM 25FT FQ FG MST WO 828517 FG 11142

Approved ☑ By Metallurgist Approved Date 10/24/17

Chemistry Data

	Heat Number	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Al	V	B	Other
	177569	0.410	0.890	0.013	0.020	0.230	0.069	0.847	0.159	0.250	0.003	0.028	0.0030	

Q&T Hardness Test Data

	HardnessType	Min	Max	Location	Sample Location
	Rc		27.9		Surface
	Rc		32.7		Mid Radius
	Rc		33.7		Core

Q&T Tension Test Data

Sample Gage: .500" Dia.
Bale Number:

Tensile	Yield 1	Method 1	Yield 2	Method 2	Elong %	R/A %	Gage Length	Tensile Location	PC #
148 Ksi	138 Ksi	.2% Offset			17.0	52.0	2.000" G.L.	Center	

Heat Treat Data

Austenitized at 1,630°F for 0.7 minutes
Tempered at 1,400°F for 0.7 minutes

Induction Heating
Water Quenched

Other Test Data

Decarb (Inches)	Straightness	Magnetism (gauss)	As Quenched (Rc)	Microstructure
	0.125"/5 Ft	+/- 5		

Description of Other Tests

- Produced Stress Free

We hereby certify that the reported data are correct according to Gerdau tests and those of its suppliers.

Doug Melchi, Metallurgist

F037A

422637

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304R0.375

DATE: MAY 11 2018

PO / BATCH NO.: 039776/507082

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 12'

QUANTITY INSPECTED: 12'

QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.375

THICKNESS RECEIVED: 0.375

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A276
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat #646m
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS	SIGNED OFF BY:
DATE: 11 MAY 11 2018 9-89	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 304/316 SS ROUND BAR
(NOTE: AISI 303 NOT ACCEPTABLE)

B SPECIFICATION: ASTM A276

PART NUMBER: M304R D.DDD
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 0.75" ROUND BAR = M304R0.750

RELEASED 09/08/25 MA

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD SPECS (ZN D6-1), REF PAR 08-020A	CP	09.07.15
A	NEW ISSUE	AJS	08.03.03

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		M304R	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		304/316 ROUND BAR	NTS
DATE	09.07.15		

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North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

5768

METALLURGICAL TEST REPORT

PO.14146

50230

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 373018 31

Mail To:

Ship To:

Customer: 007080 003

Date: 1/19/2018 Page: 1

Steel: 304/304L

Finish: CD

Your Order: MS1116

NAS Order: IN 0257931 04

Heat Treat Code: 44,987

Corrosion: ASTM A262/15 Prac A/E OK

PRODUCT DESCRIPTION:

Round Bar, Annealed, Cold Draw
UNS 30400/30403 EN 10204 3.1, ASTM A484/16
ASTM A276/17, ASTM A479/17, ASTM A182/16a CHEM ONLY,
ASME SA479/13, ASME SA182/13 CHEM ONLY
AMS 5639J, AMS 5647K, AMS QQS-763D, QQS-763F, ASTM F899/12b
SOLUTION ANNEAL TEMP 1900F MIN, ASTM A320/17a CL 1 GR B8
ASTM A193/16-ASME SA193/13 CL 1 GR B8

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE 2011/65/EU.RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

3/8

Product Id	Skid #	Diameter	Size	Weight	Length	Mark	Pieces	Commodity Code
BJ2280 9		.3750		1,281	144.00	11	1	

CHEMICAL ANALYSIS

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/14a

Heat	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
666M	US	.028	.18	18.14	.39	1.31	.280	.071	8.50	.029

S %	SI %
.0260	.23

MECHANICAL PROPERTIES

Product Id	Loc	HB No.	.2YS KSI	UTS KSI	RA %	Elng % 2"
BJ2280 9	R L	226.0	84.97	111.55	69.24	41.70

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical Dept. Mgr. KRIS LARK

1/19/2018

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304/RO.4375 PO / BATCH NO.: 039776/5070820

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: 0.4375

QUANTITY RECEIVED: 12 THICKNESS RECEIVED: 0.4375

QUANTITY INSPECTED: 12 SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: 0 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm A276
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat #CH-6643
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS	SIGNED OFF BY:
DATE: 11 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 304/316 SS ROUND BAR
(NOTE: AISI 303 NOT ACCEPTABLE)

B SPECIFICATION: ASTM A276

PART NUMBER: M304R | D.DDD | DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 0.75" ROUND BAR = M304R0.750

RELEASED 09/03/25

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD SPECS (ZN D6-1), REF PAR 08-020A	CP	09.07.15
A	NEW ISSUE	AJS	08.03.03

DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. M304R — REV. B — SHEET 1 OF 1
MFG. APPR.		
APPROVED		TITLE: 304/316 ROUND BAR — SCALE: NTS
DE APPR.		
DATE	09.07.15	

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5779 RSS-716 50781 15622

CHANDAN STEEL LIMITED

(GOVT. OF INDIA RECOGNISED EXPORT HOUSE)

ISO 9001 : 2008 CERTIFICATE No. 01 100 011022

ADM. OFFICE: 501, SUKH SAGAR, N. S. PATKAR MARG, MUMBAI 400 007, INDIA
Tel.: 91-22- 66290600. Fax.: 91-22-66290633/34
Website : www.chandansteel.net
Email : csl@chandansteel.net

L/c. No.:

I/c. Date:

WORKS:PLOT NO. 31 TO 36 ,45,46,48, & 49/2,142
(EXP. AREA)GIDC, UMBERERGAON & SURVEY NO. 102/2 & 3,VILLAGE,
DEHARI, TALUKA:UMBERGAON, DIST:VALSAD, GUJARAT -396171
GSTIN - 24AAACC4713B1ZG

F824 QC 09A / 02 / 10.12.2012

MILL TEST /INSPECTION CERTIFICATE 3.1

ACCORDING TO EN 10204 : 2005

Test Certificate No.	: EXP/01152 - 07/2017-2018
Date of Issue	: 03.01.2018
P. O. No.	: MN5942
SC_No. & Date	: 17-18/00447, Dt.08.11.2017
Invoice No. & Date	: EXP/01152/2017-18 Dt.03.01.2018

PRODUCT DESCRIPTION	LENGTH		Net Wt.
STAINLESS STEEL ROUND BARS	Ordered	Actual	1890 Lbs.
	12' - 14'	12' - 14'	

Heat No.	Grade AISI	Size mm/inches	Tolerance	Process Route
CH-6643	304L	7/16"	h9	Electric Melting, A.O.D. Refining, Continuous Casting

CHEMICAL COMPOSITION (Weight %)

	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Ti	N
Min.	-	-	-	-	-	18.00	-	8.00	-	-	-
Max.	0.030	1.00	2.00	0.045	0.030	20.00	-	12.00	-	-	-
Results	0.021	0.42	1.58	0.040	0.016	18.32	-	8.03	-	-	-

MECHANICAL PROPERTIES

Specified Value	Yield Strength N/mm²/MPa (Rp0.2)	Tensile Strength N/mm²/MPa (Rm)	Elongation %	Reduction of Area %	Hardness (HB)
Min.	310	620	30	40	-
Max.	-	-	-	-	-
Results	544	740	35	65	229-232

Remarks:

1. Cold drawn & Centreless Ground.
2. Solution annealed at 1050 °C.
3. PMI test done 100% & found Satisfactory.
4. Material is free from radio-active contamination.
5. Inter-Granular Corrosion Test as per ASTM A262 - 15 (Pr.E) satisfactory.
6. The material conforms to ASTM A276-15/A182-15/A479-15 & ASME SA479-13 Specifications.
7. Location of sample - Centre, Direction - Longitudinal, Test Temp - Room Temp., Shape of Test Piece - Round.
8. Marking details - Company Logo, Size, Grade & Heat No.
9. The material is manufactured /melt in Chandan Steel Mill and is of Indian Origin.
10. No welding/weld repairs was performed on this material.

BUNDLE NO.: 23 to 25

CHANDAN STEEL LTD. Q.A.

It is hereby certified that the above results are true and correct in every details and are meeting the requirements of specification & purchase order.

B. S. RAUTELA
MANAGER - QUALITY ASSURANCE

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6B0.750X01.500 PO / BATCH NO.: 038776/5070819

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 20

QUANTITY INSPECTED: 20

QUANTITY REJECTED: Ø

THICKNESS ORDERED: 0.750

THICKNESS RECEIVED: 0.750

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B-221
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 68549
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221 (B)

PART NUMBER:

M6061T6B	T.TTT	X	WW.WWW
	THICK		WIDTH

WHERE "T.TTT" = THICKNESS IN INCHES
"WW.WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED
2009 -09- 03

REV.	DESCRIPTION	BY	DATE
B	REMOVE QQ-A-250/11 OPTION, REFORMAT NOTES, ADD ASTM B211/B221 (ZN D7-1)	CP	09.07.13
A	NEW ISSUE	DS	01.06.08

DESIGN	DS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. M6061T6B — REV. B — SHEET 1 OF 1
MFG. APPR.		
APPROVED		TITLE: 6061-T6 BAR — SCALE: NTS
DE APPR.		
DATE	09.07.13	

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#2584 FAL-34112-1 TMO-2104 49670

Test de dureté Rockwell
Rockwell Hardness Test

Client / Customer : **LES ACIERS TRANSBEC (1997) LTEE.**

Adresse / Address : **4054 BOUL. LE CORBUSIER # 201**
LAVAL, QC
H7L5R2

commande **7011453**

bon de commande / Purchase order # : **OU-47404**

de matrice / Die # : **MS 16477** Description : **1 1/2" X 3/4" FLAT BAR**

Alliage & trempage / Alloy & temper : **6061 T6** Longueur / Lenght : **6097 mm**

Contrôle / Control # : **84119-2**

Coulée / Cast # : **68549**

Dureté Rockwell E / Rockwell E hardness : **94 HRE** Min. requis / Min. required : **88 HRE** Max. permis / Max. permitted : **100 HRE**

Composition chimique typique / Typical chemical composition :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6063	0.28 - 0.60	0.13 - 0.25	0.10 Max	0.10 Max	0.35 - 0.73	0.10 Max	0.05 Max	0.05 Max
6005	0.68 - 0.72	0.15 - 0.27	0.04 - 0.08	0.06 - 0.08	0.48 - 0.52	0.03 Max	0.05 Max	0.03 Max
6005A	0.65 - 0.75	0.15 - 0.27	0.15 Max	0.20 - 0.30	0.45 - 0.55	0.10 Max	0.05 Max	0.05 Max
6061	0.50 - 0.76	0.13 - 0.29	0.15 - 0.28	0.10 Max	0.80 - 1.00	0.04 - 0.14	0.08 Max	0.05 Max
6351	0.7 - 1.3	0.5 Max	0.10 Max	0.40 - 0.80	0.40 - 0.80	---	0.50 Max	0.20 Max

Nous certifions que le matériel fourni rencontre les exigences chimiques telles qu'annoncées par la norme ASTM B-221-14 excepté pour la section 8.2 (nombre de spécimen) .

We hereby certify that the material supplied meets the chemical properties as published by the ASTM B-221-14 except for section 8.2 (number of specimen) .

Sincèrement vôtre, date : **2017-03-10**
Yours truly,

Daniel Alfredo Pelletier
Directeur Qualité
Quality Director

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M606176BQ.750x08.000 PO / BATCH NO.: 039776/B070818

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 12'

QUANTITY INSPECTED: 12'

QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.750

THICKNESS RECEIVED: 0.750

SHEET SIZE ORDERED: N/A

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B221
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 892190
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 ~~OR ASTM B221~~

B

PART NUMBER: M6061T6B | T.TTT | X | WW.WWW
THICK | WIDTH

WHERE "T.TTT" = THICKNESS IN INCHES
"WW.WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED
2009 -09- 03

REV.	DESCRIPTION	BY	DATE
B	REMOVE QQ-A-250/11 OPTION, REFORMAT NOTES, ADD ASTM B211/B221 (ZN D7-1)	CP	09.07.13
A	NEW ISSUE	DS	01.06.08

DESIGN	DS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. M6061T6B — REV. B — SHEET 1 OF 1
MFG. APPR.		
APPROVED		TITLE: 6061-T6 BAR — SCALE: NTS
DE APPR.		
DATE	09.07.13	

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2603 FAL-348 50924 16132

signature aluminum CANADA INC

CERTIFICATE OF COMPLIANCE

SIGNATURE ALUMINUM CANADA
1850 CLEMENTS RD
PICKERING, ON L1W 3R8

01/11/2018	5461618	130405	1
4500853283	035450	892190	01/17/18

Sold:

Item No.	Material	Material Description	
001	C-012774-1	144" Mill 6061 T6511	160001320 .75"X8"

Gross Weight: 1,329 LBS

Net Weight: 1,314 LBS 16 PCS 1 PKGS

Specification: ASTM B308-02 & ASTM B221-08

Mechanical Tests:

Tensile MPA / KSI	Yield MPA / KSI	% Elongation	Conductivity	HRE
304.2 / 44.1	284.2 / 41.2	14.1	N/A	94

Chemical Analysis:

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	V	Zr
0.60	0.23	0.19	0.05	0.82	0.08	0.04	0.01	0.01	0.00

This Material is Made in Canada

This Material is RoHS Compliant

This will certify that the material described herein has been inspected and tested in accordance with Signature Aluminum Canada's standard sampling and testing procedures or in accordance with the requirements of any specification forming a part of the material description to the extent indicated herein. Data of chemical compositionfor the material and test results from samples representative of the material are set forth above hereof or in any attachments hereto. This information shows that the material meets the applicable requirements. Inspection and test records are maintained on file. This certificate shall be deemed apart of and subject to the terms and conditions of warranty set forth on the reverse side of our order acknowledgement form. No other warranties are applicable.

S. Gooder
Quality Manager
Signature Aluminum Canada Inc

ISO 9001/TS16949 Registered Company

Visit us at www.signaturealum.com

Rev A

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6R0.750 PO / BATCH NO.: 089776/5070817

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: 0.750

QUANTITY RECEIVED: 40' THICKNESS RECEIVED: 0.750

QUANTITY INSPECTED: 40' SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: Ø SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B-221
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat#68706
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-8 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221

B

PART NUMBER: M6061T6R|D.DDD|
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 5/8" ROUND BAR = M6061T6R0.625

RELEASED
2009 -09- 09

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD B211& B221 SPEC (ZN D8-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	DS	01.06.08

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.07.13

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M6061T6R — REV. B — SHEET 1 OF 1

TITLE: 6061-T6 ROUND BAR — SCALE: NTS

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RAL-34 # 5157 TRA-1723 49072

Test de dureté Rockwell
Rockwell Hardness Test

Client / Customer : **LES ACIERS TRANSBEC (1997) LTEE.**

Adresse / Address : **4054 BOUL. LE CORBUSIER, #201**
LAVAL, QC
H7L5R2

commande # : **7020941**

bon de commande / Purchase order # : **OU-47416**

de matrice / Die # : **MS 9909** Description : **3/4"ROD** al

Alliage & trempage / Alloy & temper : **6061 T6** Longueur / Lenght : **6097 mm**

Contrôle / Control # : **85611-1** al

Coulée / Cast # : **68706** al

Dureté Rockwell E / Rockwell E hardness : **91 HRE** Min. requis / Min. required : **88 HRE** Max. permis / Max. permitted : **100 HRE**

Composition chimique typique / Typical chemical composition :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6063	0.20 - 0.60	0.35 Max	0.10 Max	0.10 Max	0.45 - 0.90	0.10 Max	0.10 Max	0.10 Max
6005	0.60 - 0.90	0.35 Max	0.10 Max	0.10 Max	0.40 - 0.60	0.10 Max	0.10 Max	0.10 Max
6005A	0.66- 0.74	0.14 - 0.28	0.08 - 0.16	0.18 – 0.26	0.46 – 0.54	0.03 Max	0.05 Max	0.05 Max
6061	0.40 - 0.80	0.70 Max	0.15 – 0.40	0.15 Max	0.80 – 1.20	0.04 - 0.35	0.25 Max	0.15 Max
6351	0.7 - 1.3	0.5 Max	0.10 Max	0.40 - 0.80	0.40 - 0.80	---	0.20 Max	0.20 Max

Nous certifions que le matériel fourni rencontre les exigences chimiques telles qu'annoncées par la norme ASTM B-221-14 excepté pour la section 8.2 (nombre de spécimen) . al

We hereby certify that the material supplied meets the chemical properties as published by the ASTM B-221-14 except for section 8.2 (number of specimen) .

Sincèrement vôtre, date : **2017-03-28**
Yours truly,

Daniel Alfredo Pelletier
Directeur Qualité
Quality Director

F.07.04 rev0 Rapport depropriétés mécaniques.doc

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6R3.750 PO / BATCH NO.: 039776/5070816

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: 3.750

QUANTITY RECEIVED: 12' THICKNESS RECEIVED: 3.750

QUANTITY INSPECTED: 12' SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: 0 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B221
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # 201805092
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-80 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221

B

PART NUMBER: M6061T6R|D.DDD|
DIA.

WHERE "D.DDD" = DIAMETER IN INCHES

EG. 5/8" ROUND BAR = M6061T6R0.625

RELEASED
2009 -09- 09

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD B211& B221 SPEC (ZN D8-1), REF PAR 08-020A	CP	09.07.13
A	NEW ISSUE	DS	01.06.08

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.07.13

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M6061T6R — REV. B — SHEET 1 OF 1

TITLE 6061-T6 ROUND BAR — SCALE NTS

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Service Center Metals
5850 Quality Way
Prince George, VA 23875

Can Do.

CERTIFIED INSPECTION REPORT AND TEST RESULTS FOR EXTRUDED PRODUCTS

Made In the U.S.A.

OUR ORDER NUMBER	ITEM
946676	1

BILL TO	MANIFEST NUMBER	DIE NUMBER	DATE OF SHIPMENT	CERTIFICATION
	362427	RD0027	3/28/2018	ASTM-B221-14 StencilCont
SHIP TO	**CUSTOMER PO**	**ALLOY / TEMPER**	**SALESPERSON**	**SPECIFICATION**
	4500874761	6061-T6511	D.Schroeder (Canada)	AMS-QQA-200/8 Rev-A obsolete
Quantity Certified 4,364 lbs 28pcs	**CUSTOMER PART NUMBER**	**DESCRIPTION**		
	160000985	Lightning Rod Tite 3.750 +/-.012		

We hereby certify that the material covered by this report has been inspected in accordance with the most recent certification revision, and has been found to meet the applicable requirements described herein, including any specifications forming a part of the description, and that samples representative of the material met the composition limits and had the mechanical properties shown. Items produced and certified as 6061-T6511 also meet the requirements of 6061-T6.

All aluminum products supplied by Service Center Metals, LLC contain no functional mercury. Neither mercury nor its compounds are used in the manufacture of aluminum products at our facility. Furthermore, aluminum products supplied by Service Center Metals have not, to the best of our knowledge, contacted any source of mercury.

SCM is ISO 9001-2015 certified *This product is RoHS-2, REACH, and DFARS compliant.*

Mechanical Properties

Tests	Lot No.	Test Date	Ultimate Tensile Strength (KSI) min	Ultimate Tensile Strength (KSI) max	Yield Strength (KSI) min	Yield Strength (KSI) max	Percent Elongation min	Percent Elongation max
1	201805092	3/19/18	56.50	56.50	53.20	53.20	13.20	13.20

Chemical Composition for Aluminum Alloy 6061

Cast #	Lot No.	Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	AL	Others Each	Others Total	Melt Source:
03121803	201805092	6061	0.76	0.36	0.34	0.10	0.88	0.09	0.08	0.02	97.37	0.05	0.15	*United States of America*
03121804	201805092	6061	0.72	0.37	0.35	0.10	0.88	0.09	0.08	0.02	97.39	0.05	0.15	*United States of America*

SCM products are melted and extruded in the USA

Print Date: 3/28/2018

Calvin J. Wiggins, Director of Quality & Technical Services

Rev 3/14/2018

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M5052H32S-.032 PO / BATCH NO.: 039776/5070815

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes

QUANTITY RECEIVED: 64 ST

QUANTITY INSPECTED: 64 ST

QUANTITY REJECTED: 0

THICKNESS ORDERED: .032

THICKNESS RECEIVED: .032

SHEET SIZE ORDERED: 4X8

SHEET SIZE RECEIVED: 4X8

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	(N)	
CORRECT FINISH	(Y)	N	
CORROSION	Y	(N)	
CORRECT GRAIN DIRECTION	(Y)	N	
CORRECT MATERIAL PER M-DRAWING	(Y)	N	Astm B209
CORRECT THICKNESS	(Y)	N	
PHOTO REQUIRED	Y	(N)	
CORRECT REF # TO LINK CERT	(Y)	N	Heat # GPB1710W50138
CORRECT MATERIAL IDENTFICATION	(Y)	N	
CORRECT M# ON THE MATERIAL	(Y)	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	(N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	(N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS 11	SIGNED OFF BY:
DATE: 9-89 MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 5052-H32 ALUMINUM SHEET

SPECIFICATION: QQ-A-250/8 OR AMS-QQ-A-250/8
~~OR AMS 4016~~
OR ASTM B209

B

PART NUMBER: ~~M5052H32S~~ .XXX
THK

WHERE ".XXX" = SHEET THICKNESS (IN INCHES)

EG. 0.063" THICK SHEET = M5052H32.063

PREFERRED SIZE: .XXX BY 4FT BY 8FT

RELEASED
2009 -10- 30

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD B209 SPEC (ZN D8-1), PAR 08-020A	CP	09.09.26
A	NEW ISSUE	DS	01.06.08

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.09.26

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M5052H32S — REV. B — SHEET 1 OF 1

TITLE: 5052-H32 SHEET SPEC — SCALE: NTS

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- 8.7288

Dart

15948N

明泰铝业

ZHENGZHOU MINGTAI INDUSTRY CO., LTD
NO.6 CHANGCHUN ROAD, HIGH AND NEW TECHNOLOGY
ZONE, ZHENGZHOU HENAN CHINA
TEL: 371-67898611 FAX: 371-67898612

INSPECTION CERTIFICATE

BUYER:

INVOICE NO.: Z-RYWP171009
CONTRACT NU 4500839108/4500839404
LOADING PORT TIANJIN, CHINA
DESTINATION: TORONTO. CANADA
SHIPPING MAR N/M
DATE: 11/02/17

DESCRIPTION OF GOODS:
ALUMINIUM COILS ALLOY 3003/H14 AND 5052/H32
P.O. NO.: 4500839108/4500839404
DAP TORONTO, CANADA

ACTUAL MILL CHEMICAL UNIT:%												
Alloy No.	Temper	Lot No.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others	Al
STANDARD			0.6	0.7	0.05-0.2	1.0-1.5	-	-	0.1	-	0.15	REMAIN
3003	H14	GFA1706W30032	0.180	0.590	0.120	1.160	0.010	0.010	0.010	0.033	0.15	REMAIN
3003	H14	GFB1706W30168	0.175	0.563	0.120	1.172	0.036	0.010	0.010	0.035	0.15	REMAIN
3003	H14	GFB1709W30120	0.1675	0.5518	0.1145	1.1267	0.0113	0.0089	0.0092	0.0297	0.15	REMAIN
3003	H14	GFB1710N30001	0.176	0.5708	0.1197	1.1189	0.0196	0.0086	0.0125	0.0326	0.15	REMAIN
3003	H14	GFB1710W30010	0.18	0.5639	0.1092	1.1458	0.006	0.0104	0.0101	0.032	0.15	REMAIN
3003	H14	GFB1710W30025	0.1678	0.5607	0.1193	1.1485	0.0102	0.0135	0.004	0.0315	0.15	REMAIN
3003	H14	GFB1710W30032	0.1516	0.5691	0.1166	1.1095	0.0104	0.0161	0.009	0.0292	0.15	REMAIN
3003	H14	GFB1710W30046	0.1617	0.5897	0.1241	1.1129	0.0239	0.0093	0.0063	0.0331	0.15	REMAIN
3003	H14	GFB1710W30047	0.1741	0.5936	0.1177	1.1581	0.0207	0.0082	0.0036	0.0309	0.15	REMAIN
3003	H14	GFB1710W30048	0.1649	0.5729	0.1199	1.1845	0.0068	0.0191	0.001	0.0315	0.15	REMAIN
3003	H14	GFB1710W30082	0.1706	0.5565	0.1067	1.1225	0.0082	0.0146	0.0056	0.0305	0.15	REMAIN
3003	H14	GFB1710W30083	0.1706	0.5565	0.1067	1.1225	0.0082	0.0146	0.0056	0.0305	0.15	REMAIN
3003	H14	GFB1710W30084	0.1755	0.5732	0.115	1.112	0.0202	0.0097	0.0036	0.035	0.15	REMAIN
STANDARD			0.25	0.4	0.1	0.1	2.2-2.8	0.15-0.35	0.1	-	0.15	REMAIN
5052	H32	GFB1710W50132	0.0945	0.3773	0.0141	0.0601	2.4564	0.1724	0.0172	0.0183	0.15	REMAIN
5052	H32	GFB1710W50138	0.0827	0.313	0.0197	0.0713	2.4534	0.1729	0.0196	0.021	0.15	REMAIN
5052	H32	GFB1710W50139	0.0979	0.3171	0.0204	0.0585	2.4558	0.1822	0.0205	0.0178	0.15	REMAIN
5052	H32	GFB1710W50140	0.0924	0.2753	0.0274	0.0872	2.4182	0.1691	0.0207	0.0175	0.15	REMAIN
5052	H32	GFB1710W50141	0.0793	0.253	0.0332	0.0859	2.4451	0.1691	0.0367	0.0204	0.15	REMAIN
5052	H32	GFB1710W50266	0.1023	0.2659	0.0245	0.063	2.4489	0.1884	0.0167	0.0298	0.15	REMAIN
5052	H32	GFB1710W50305	0.0825	0.3237	0.019	0.0569	2.3629	0.1567	0.0305	0.0208	0.15	REMAIN

MECHANICAL PROPERTY TEST REPORTS							
Alloy No.	Temper	Lot No.	SIZE(MM)	SIZE(IN)	Tensile strength	Yield strength	Elongation
					(MPa)	(MPa)	(%)
STANDARD					138-179	min118	min 5
3003	H14	GFA1706W30032	1.27*1524*C	.050*60*C	156	146	12
3003	H14	GFB1706W30168	1.27*1524*C	.050*60*C	172	162	7
3003	H14	GFB1709W30120	2.54*1219*C	.100*48*C	158	137	10
3003	H14	GFB1710N30001	1.6*1219*C	.063*48*C	150	146	8
3003	H14	GFB1710W30010	3.175*914.4*C	.125*36*C	153	130	12
3003	H14	GFB1710W30025	1.6*1524*C	.063*60*C	152	132	10
3003	H14	GFB1710W30032	3.175*1829*C	.125*72*C	147	127	13
3003	H14	GFB1710W30046	2.997*1219*C	.118*48*C	161	130	14
3003	H14	GFB1710W30047	3.175*1524*C	.125*60*C	160	148	17
3003	H14	GFB1710W30048	1.6*1219*C	.063*48*C	163	152	10
3003	H14	GFB1710W30082	2.997*1524*C	.118*60*C	176	163	13
3003	H14	GFB1710W30083	3.175*1524*C	.125*60*C	171	148	10
3003	H14	GFB1710W30084	3.175*1524*C	.125*60*C	166	128	15
STANDARD					214-262	min159	min 7
5052	H32	GFB1710W50132	1.6*1219*C	.063*48*C	218	169	12
5052	H32	GFB1710W50138	0.813*1219*C	.032*48*C	226	182	10
5052	H32	GFB1710W50139	2.032*1219*C	.080*48*C	221	162	12
5052	H32	GFB1710W50140	2.032*1219*C	.080*48*C	217	160	14
5052	H32	GFB1710W50141	2.032*1219*C	.080*48*C	217	182	14
5052	H32	GFB1710W50266	3.175*1829*C	.125*72*C	224	178	12
5052	H32	GFB1710W50305	3.175*914*C	.125*36*C	222	161	14

We certify that 3003H14 material complies with ASTM B209-14,AMS QQA 250/2 standard.

We certify that 5052H32 material complies with ASTM B209-14,AMS QQA-250/8B standard.

MANUFACTURER: ZHENGZHOU MINGTAI INDUSTRY CO., LTD

郑州明泰实业有限公司

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M5052H325.040 PO / BATCH NO.: 039776/50708124

DATE: MAY 11 2018

MATERIAL CERT REC'D: Yes THICKNESS ORDERED: .040

QUANTITY RECEIVED: 64 sf THICKNESS RECEIVED: .040

QUANTITY INSPECTED: 64 sf SHEET SIZE ORDERED: 4X8

QUANTITY REJECTED: 0 SHEET SIZE RECEIVED: 4X8

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	Astm B209
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # CLFB1801W50083
CORRECT MATERIAL IDENTFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK.
RECORD RESULTS BELOW

	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: DAS	SIGNED OFF BY:
DATE: 9-MAY 11 2018	DATE:

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 5052-H32 ALUMINUM SHEET

SPECIFICATION: QQ-A-250/8 OR AMS-QQ-A-250/8
~~OR AMS 4016~~
OR ASTM B209

B

PART NUMBER: M5052H32S|.XXX
|THK|

WHERE ".XXX" = SHEET THICKNESS (IN INCHES)

EG. 0.063" THICK SHEET = M5052H32.063

PREFERRED SIZE: .XXX BY 4FT BY 8FT

RELEASED
2009 -10- 30

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DWG, ADD B209 SPEC (ZN D8-1), PAR 08-020A	CP	09.09.26
A	NEW ISSUE	DS	01.06.08

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.09.26

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. M5052H32S — REV. B — SHEET 1 OF 1

TITLE: 5052-H32 SHEET SPEC — SCALE: NTS

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87288.. Dart

15949 N

明泰铝业
WWW.MINGTAI.CN

ZHENGZHOU MINGTAI INDUSTRY CO., LTD
NO.6 CHANGCHUN ROAD, HIGH AND NEW TECHNOLOGY ZONE, ZHENGZHOU HENAN CHINA
TEL: 371-67898611 FAX: 371-67898612

INSPECTION CERTIFICATE

BUYER:

INVOICE NO.: Z-RYWP180202
CONTRACT NUMBER: 4500858689
LOADING PORT: QINGDAO, CHINA
DESTINATION: TORONTO, CANADA
SHIPPING MARKS: N/M
DATE: 2/11/18

DESCRIPTION OF GOODS:
ALUMINIUM SHEETS AND COILS ALLOY 5052H32
P.O. NO.: 4500858689
DAP TORONTO, CANADA

ACTUAL MILL CHEMICAL UNIT:%

Alloy No.	Temper	Lot No.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others	Al
STANDARD			0.25	0.4	0.1	0.1	2.2-2.8	0.15-0.35	0.1	-	0.15	REMAIN
5052	H32	GFB1801W50081	0.056	0.147	0.018	0.063	2.533	0.21	0.007	0.019	0.15	REMAIN
5052	H32	GFB1801W50082	0.049	0.134	0.017	0.063	2.48	0.204	0.007	0.02	0.15	REMAIN
5052	H32	GFB1801W50082	0.049	0.134	0.017	0.063	2.48	0.204	0.007	0.02	0.15	REMAIN
5052	H32	GFB1801W50083	0.1045	0.3111	0.0249	0.0469	2.4639	0.1627	0.0207	0.0199	0.15	REMAIN
5052	H32	GFB1801W50083	0.1045	0.3111	0.0249	0.0469	2.4639	0.1627	0.0207	0.0199	0.15	REMAIN
5052	H32	GFD1801W50036	0.1129	0.3648	0.0267	0.0571	2.3898	0.1759	0.0401	0.0166	0.15	REMAIN
5052	H32	GFD1801W50037	0.1074	0.3298	0.0237	0.0537	2.3824	0.1957	0.025	0.0166	0.15	REMAIN
5052	H32	GFD1801W50038	0.1059	0.3784	0.0234	0.0575	2.3789	0.1693	0.0292	0.0166	0.15	REMAIN
5052	H32	GFD1801W50059	0.111	0.3129	0.0261	0.0827	2.3961	0.1763	0.0151	0.0358	0.15	REMAIN
5052	H32	GFD1801W50061	0.111	0.3129	0.0261	0.0827	2.3961	0.1763	0.0151	0.0358	0.15	REMAIN

MECHANICAL PROPERTY TEST REPORTS

Alloy No.	Temper	Lot No.	SIZE(MM)	SIZE(IN)	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)
STANDARD					214-262	min159	min7
5052	H32	GFB1801W50081	1.27*1219*3048	.050*48*120	233	204	8
5052	H32	GFB1801W50082	1.016*1219*3048	.040*48*120	225	189	12
5052	H32	GFB1801W50082	1.016*1219*C	.040*48*C	225	189	12
5052	H32	GFB1801W50083	1.016*1219*C	.040*48*C	228	190	11
5052	H32	GFB1801W50083	1.016*1219*2438	.040*48*96	228	190	11
5052	H32	GFD1801W50036	4.826*1219*3048	.190*48*120	219	173	14
5052	H32	GFD1801W50037	4.826*1219*2438	.190*48*96	223	178	12
5052	H32	GFD1801W50038	4.826*1219*2438	.190*48*96	218	180	12
5052	H32	GFD1801W50059	4.826*1524*3048	.190*60*120	226	183	13
5052	H32	GFD1801W50061	4.826*1524*3048	.190*60*120	227	200	12

We certify that 5052H32 material complies with ASTM B209-14,AMS QQA-250/8B standard.

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